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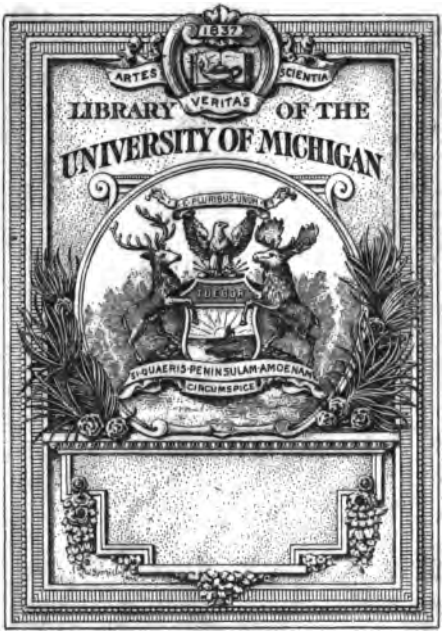

THE GIFT OF
Horticultural society.

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PROCEEDINGS

OF THE

State Horticultural Society

AT ITS

Thirty-second Annual Session

HELD AT

TRENTON, N. J.

January 3d and 4th, 1907

Organized August 17, 1876. Incorporated December 15, 1887.

SOMERVILLE, N. J.:
THE UNIONIST-GAZETTE PRINTING HOUSE.
1907.

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LIST OF OFFICERS 1907.

President.

HORACE ROBERTS,.....Moorestown, Burlington County.

Vice-President.

ELIAS S. BLACK,.....Little Silver, Monmouth County.

Secretary.

MARY W. BUDD,.....Mount Holly, Burlington County.

Treasurer.

GEORGE E. DECAMP, ...Roseland, Essex County.

Executive Committee.

DR. J. B. WARD, ...Lyons Farms, Essex County.
WILLIAM H. SKILLMAN,.....R. F. D., Belle Mead, Somerset County.
JOHN S. COLLINS,.....Moorestown, Burlington County.
W. H. REID,.....Tennent, Monmouth County.
H. E. HALE,.....Princeton, Mercer County.

Fruit Committee.

CHARLES BLACK,.....Hightstown, Mercer County.
HOWARD F. DECOU,.....Moorestown, Burlington County.
C. C. HULSART,.....Matawan, Monmouth County.
ALBERT REPP,.....Glassboro, Gloucester County.
W. H. MORGAN,.....Westmont, Camden County.
J. L. LIPPINCOTT,.....Riverton, Burlington County.

Flower Committee.

LESTER C. LOVETT,.....Little Silver, Monmouth County.
CHARLES A. BLACK,.....Hightstown, Mercer County.
DR. WALTER VAN FLEET,.....Little Silver, Monmouth County.
JESSIE L. COLSON,.....R. F. D. 3, Elmer, Salem County.

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Vegetable Committee.

HOWARD G. TAYLOR,.....Riverton, Burlington County.
JOSEPH BARTON,.....Marlton, Camden County.
G. W. GOULD,.....Box 101, Montclair, Essex County.
TIMOTHY M. WHITE,.....Little Silver, Monmouth County.

Special Fruit and Flower Committee.

DR. J. B. WARD,.....Lyons Farms, Essex County.
I. J. BLACKWELL,.....Titusville, Mercer County.
DAVID BAIRD,.....Baird, Mercer County.
ELIAS S. BLACK,.....Little Silver, Monmouth County.
CLAYTON L. ANDREWS,.....Moorestown, Burlington County.

Legislative Committee.

DR. J. B. WARD,.....Lyons Farms, Essex County.
S. B. KETCHAM,.....Pennington, Mercer County.
CHARLES BLACK,.....Hightstown, Mercer County.
EMMOR ROBERTS,.....Moorestown, Burlington County.
GEO. E. DECAMP,.....Roseland, Essex County.

Delegates to State Board of Agriculture.

ALBERT REPP (two years).....Glassboro, Gloucester County.
F. J. TOMLINSON (one year).....Pittstown, Hunterdon County.

Delegates to Connecticut Pomological Society in 1907.

HORACE ROBERTS,.....Moorestown, Burlington County.
WILLIAM H. REID,.....Tennent, Monmouth County.

Delegates to State Horticultural Association of Pennsylvania in 1907.

JOSEPH BARTON,.....Marlton, Burlington County.
HENRY E. HALE,.....Princeton, Mercer County.

Delegates to Peninsula Horticultural Society in 1907.

DR. JOSEPH B. WARD,.....Lyons Farms, Essex County.
ALBERT REPP,.....Glassboro, Gloucester County.

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List of Members of the New Jersey State Horticultural Society.

ATLANTIC COUNTY.

William A. Elvins, Hammonton.
Gerry Valentine, Hammonton.

BERGEN COUNTY.

E. S. Carman, River Edge.
Abram C. Holdrum, Westwood.

BURLINGTON COUNTY.

George Abbott, Moorestown.
Henry H. Alberson, Burlington.
Clayton L. Andrews, Moorestown.
David L. Ballinger, Moorestown.
John C. Beans, Moorestown.
Thomas J. Beans, Moorestown.
Charles D. Barton, Marlton.
Joseph Barton, Marlton.
Edmund Braddock, Medford.
Mary W. Budd, Mount Holly.
Mark H. Buzby, Masonville.
J. Heulings Coles, R. F. D., Moorestown.
Aaron L. Collins, Moorestown.
Arthur J. Collins, Moorestown.
Charles Collins, Moorestown.
John S. Collins, Moorestown.
Lester Collins, Moorestown.
Nathan H. Conrow, Riverton.
N. P. Creeley, Burlington.
Henry D. Culin, Moorestown.
Howard F. DeCou, Moorestown.
Samuel C. DeCou, Moorestown.
Samuel S. Fort, Wrightstown.
George L. Gillingham, Moorestown.
Albert Haines, Masonville.
Charles C. Haines, R. F. D. 4, Moorestown.
Joseph M. Haines, R. F. D., Mount Holly.
T. Lee Haines, Rancocas.
Albert Hansell, Rancocas.
E. S. Holmes, Riverton.
Charles B. Hornor, Mount Holly.
George W. Jessup, Cinnaminson.
Frank P. Jones, Delano.
Benjamin Lippincott, Cinnaminson.
J. Howard Lippincott, Moorestown.
J. L. Lippincott, Riverton.
Charles Parry, R. F. D., Palmyra.
W. P. Pray, Kinkora.
Arthur L. Richie, Riverton.
Allen H. Roberts, R. F. D., Moorestown.
Emmor Roberts, Moorestown.
Horace Roberts, Moorestown.
David Satterthwaite, Crosswicks.
Howard G. Taylor, Riverton.
William J. Terrell, Burlington.

CAMDEN COUNTY.

J. O. Cuthbert, Haddonfield.
A. I. Driver, Kirkwood.
William H. Morgan, Westmont.

CAPE MAY COUNTY.

H. S. Hoffman, Cold Spring.
John B. Hoffman, Cape May C. H.
Mrs. E. S. Starr, Ocean View.

CUMBERLAND COUNTY.

Theodore F. D. Baker, Bridgeton.
Winfield S. Bonham, Shiloh.
Joseph Burt, Bridgeton.

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Wellington Kimmel, North Vineland.
R. M. Lipmon, R. F. D. 6, Vineland.
Alexander W. Pierson, Vineland.
John Wilcox, Vineland.

ESSEX COUNTY.

Cyrus B. Crane, Caldwell.
George DeCamp, Roseland.
W. W. DeCamp, Roseland.
John P. Dengler, East Orange.
Justus W. Dobbins, Verona.
Robert Newton Dobbins, Verona.
F. C. Goble, Verona.
G. W. Gould, Box 101, Montclair.
A. E. Hedden, Verona.
Edward Quinn, 22 Commerce Street, Newark.
John Quinn, 22 Commerce Street, Newark.
P. T. Quinn, 22 Commerce Street, Newark.
Joseph B. Spendlove, Lyons Farms.
Norman H. Thatcher, 164 Alden Street, Orange.
C. D. Vreeland, Upper Montclair.
Dr. Joseph B. Ward, Lyons Farms.
J. C. Williams, Montclair.

GLOUCESTER COUNTY.

Samuel S. Budd, Thorofare.
Theodore Brown, Swedesboro.
Wm. Gleason, Swedesboro.
Clayton G. Kirby, Mullica Hill.
S. Jackson Morgan, Harrisonville.
Albert Repp, Glassboro.
I. Saul, Glassboro.

HUDSON COUNTY.

John A. Nugent, Court House, Jersey City.

HUNTERDON COUNTY.

B. R. Clifford, Delaware.
Dr. F. S. Cramer, Sergeantsville.
Mrs. Bessie D. Sked, Rocktown.
F. J. Tomlinson, Pittstown P .O.

MERCER COUNTY.

C. A. Bennett, Robbinsville.
Charles Black, Hightstown.
Charles A. Black, Hightstown.
Leon H. Black, R. F. D. 2, Trenton.
Walter C. Black, Hightstown.
W. E. Black, R. F. D. 2, Trenton.
Joseph E. Black, Hightstown.
Lemuel Black, Hightstown.
C. E. Blackwell, Titusville.
Ira J. Blackwell, Titusville.
Wm. H. Blackwell, Titusville.
L. L. Brewer, Titusville.
J. F. Brown, Princeton.
S. A. Burk, Hightstown.
L. W. Carman, Box 116, Yardville.
J. G. Cortelyou, R. F. D. 1, Princeton.
F. W. Cruser, Hopewell.
Samuel S. DeCou, Trenton Junction.
Franklin Dye, Trenton.
I. W. Fleming, Titusville.
Henry E. Hale, Princeton.
S. B. Ketcham, Pennington.
Charles S. Lee, Hightstown.
J. W. Norton, Hightstown.
Mrs. A. E. Nutt, Hamilton Square.
M. V. Nutt, Hamilton Square.
Willard Perry, Wilburtha.
Martin Ribsam, Trenton.
Joseph C. Richardson, Trenton.
Elijah L. Riley, E. Hamilton Ave., Trenton.
B. W. Satterthwait, Yardville.
E. C. Sharpe, White House Station, Trenton.
Louis Strasburger, Princeton.
Thomas Q. Taylor, Hamilton Square.
John R. Thompson, Trenton.

MIDDLESEX COUNTY.

F. A. Boyd, Metuchen.
Monro Corwin, Cranbury.
James Neilson, New Brunswick.

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A. V. D. Polhemus, Franklin Park.
Colfax Schuyler, Jamesburg.
George A. Shultz, Jamesburg.
John S. Silvers, Cranbury.
George Smith, Box 18, South River.
Woodbridge Strong, New Brunswick.

MONMOUTH COUNTY.

William Adams, Milhurst.
Charles A. Baird, Baird.
David Baird, Baird.
John J. Beers, Keyport.
Elias S. Black, Little Silver.
H. V. M. Dennis, Freehold.
William B. Ellis, Freehold.
E. T. Field, Red Bank.
James C. Hendrickson, R. F. D. 1, Keyport.
J. L. Lovett, Little Silver.
Lester C. Lovett, Little Silver.
William H. Reid, Tennent.
I. S. Robbins, Allentown.
James V. Rue, Englishtown.
E. A. Sexsmith, Wall.
D. A. Vanderveer, Freehold.
Forman S. Weeden, Tennent.
S. F. Wooley, Allentown.

MORRIS COUNTY.

R. J. Bockover, Morristown.
John S. Green, Morristown.

OCEAN COUNTY.

C. M. Rorer, Cassville.

SALEM COUNTY.

Jessie L. Colson, R. F. D. 3, Elmer.
J. Walter Pancoast, Woodstown.

SOMERSET COUNTY.

Wm. Howard Gulick, Kingston.
Arthur F. Randolph, R. F. D. 2, Bound Brook.
Wm. J. Logan, Somerville.
Charles H. Servis, Skillman.
William H. Skillman, R. F. D., Belle Mead.
C. Martin Wyckoff, Bedminster.

SUSSEX COUNTY.

Edward Ackerman, Houses.
J. Frank Backster, Deckertown.
C. A. Dalrymple, Branchville.
W. H. Dalrymple, Branchville.
Henry Folk, Sparta.
Warren D. Haggerty, Deckertown.
Samuel A. Miller, Deckertown.
D. M. Roe, Branchville.
John P. Wilson, Hamburg.

UNION COUNTY.

E. P. Beebe, 417 Chilton Ave., Elizabeth.
E. R. Collins, Westfield.
Adam Dink, Union.
Hiram T. Jones, Elizabeth.

NON-RESIDENT MEMBERS.

John S. Arndt, 903 N. 42d St., Philadelphia, Pa.
F. C. Bancroft, Wyoming, Delaware.
Henry Bischoff, 93 and 99 Nassau St., New York City.
William H. Brinton, Timicula, Pa.
A. M. Brown, Wyoming, Delaware.
George C. Butz, State College, Pa.
H. W. Comfort, Fallsington, Pa.
C. S. Davison, East Stroudsburg, Pa.
R. H. Deyo & Co., Binghamton, N. Y.
Robert M. Eldon, Aspers, Pa.
Samuel Fraser, Box 215, Geneseo, Livingston Co., N. Y.
Prof. John Gifford, Cornell University, Ithaca, N. Y.
Orlando Harrison, Berlin, Maryland.
N. W. Heater, Waterbury, Conn.
J. A. Hepworth, Marlboro, N. Y.
E. J. Hollister, Winona Lake, Indiana.
James Wood Hunt, 237 South Front St., Philadelphia, Pa.
A. I. Loop, North East, Pa.
Robert P. Lovett, Fallsington, Pa.

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George H. McKay, 1118 Arch St., Philadelphia, Pa.
William H. Moon, Morrisville, Pa.
B. G. Pratt, 11 Broadway, New York City.
Frederic G. Satterthwait, Fallsington, Pa.
Fred. Schmidt, Kings Park, Long Island, N. Y.
Daniel Smiley, Mohonk Lake, Ulster Co., N. Y.
Samuel W. H. Waltz, Linden, Pa.
Dr. G. F. Warren, Cornell University, Ithaca, N. Y.
D. M. Wertz, Quincy, Franklin Co., Pa.

HONORARY MEMBERS.

H. W. Collingwood, Editor *Rural New Yorker.*
Dr. B. D. Halsted, New Brunswick, N. J.
Dr. F. M. Hexamer, 52 Lafayette Place, New York City.
William A. Manda, South Orange, N. J.
John N. May, Summit, N. J.
Prof. F. Lamson Scribner, Agricultural Dept., Washington, D. C.
Dr. John B. Smith, New Brunswick, N. J.
Mrs. Mary Treat, Vineland, N. J.
Mrs. James M. Trimble, Montclair, N. J.
Dr. Walter Van Fleet, Associate Editor *Rural New Yorker.*
Dr. E. B. Voorhees, New Brunswick, N. J.
Mrs. E. Williams, Montclair, N. J.
James Wood, Mt. Kisco, N. Y.

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List of Delegates.

The Peninsula Horticultural Society.

HON. ORLANDO HARRISON,.....Berlin, Maryland.
F. C. BANCROFT,.....Wyoming, Delaware.

The State Horticultural Association of Pennsylvania.

ROBERT M. ELDON,.....Aspers, Adams Co., Pa.
D. MAURICE WERTZ,.....Quincy, Franklin Co., Pa.

Board of Visitors to the State Agricultural College.

ABRAM C. HOLDRUM,.....Westwood, Bergen Co., N. J.
HENRY BELL,.....Union Hill, N. J.

Burlington County Board of Agriculture.

ALBERT HAINES,.....Masonville, N. J.

Camden County Board of Agriculture.

SAMUEL T. COLES,.....Ellisburg, N. J.
JOSEPH BARTON,.....Marlton, N. J.

Cape May County Board of Agriculture.

HOWARD HOFFMAN,.....Cold Spring, N. J.

Essex County Board of Agriculture.

A. E. HEDDEN,.....Verona, N. J.
J. W. DOBBINS,.....Verona, N. J.

Gloucester County Board of Agriculture.

JESSE E. BROWN,.....Swedesboro, N. J.

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Hunterdon County Board of Agriculture.

F. J. TOMLINSON,.....Pittstown, N. J.
WILLIAM BELLIS,.....Flemington, N. J.

Mercer County Board of Agriculture.

JOHN LAIN,.....Titusville, R. F. D. No. 1, N. J.
A. F. WOODWARD,.....Pennington, R. F. D. No. 1, N. J.

Middlesex County Board of Agriculture.

JAMES S. ROBBINS,.....Monmouth Junction, N. J.

Monmouth County Board of Agriculture.

WILLIAM H. REID,.....Tennent, N. J.
J. C. HENDRICKSON,.....Keyport, R. F. D. G., N. J.

Salem County Board of Agriculture.

S. JACKSON MORGAN,.....R. F. D. 1, Woodstown, N. J.

Somerset County Board of Agriculture.

WILLIAM J. LOGAN,.....Somerville, N. J.
ARTHUR F. RANDOLPH,.....R. F. D. 2, Bound Brook, N. J.

Union County Board of Agriculture.

E. R. COLLINS,.....Westfield, N. J.
ADAM DINK,.....Union, N. J.

Farmingdale Grange, No. 157.

J. C. WINSOR,.....Farmingdale, N. J.

Grange Association of Essex County.

F. C. GOBLE,.....Verona, N. J.

Monmouth Grange, No. 92.

C. H. OKERSON,.....Howell, Monmouth Co., N. J.

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Mullica Hill Grange, No. 51, P. of H.

ABBIE DUFFIELD,.....Mullica Hill, N. J.

The Princeton Agricultural Association.

E. L. VAN ZANDT,.....Blawenburg, N. J.
WM. S. SCHENCK,.....Princeton, N. J.

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By-Laws of the New Jersey State Horticultural Society.

As revised and adopted at the Thirteenth Annual Session, December 15th, 1887, at the time of incorporation, and amended at the Twenty-sixth Annual Session, January 3d, 1901.

ARTICLE I.

The officers of this Society shall consist of a President, Vice-President, Secretary, Treasurer and an Executive Committee of five members, who shall be elected by ballot at each annual meeting. The President, Secretary and Treasurer shall be members of the Executive Committee *ex officio*.

ARTICLE II.

Meetings shall be held annually, or oftener, of which ten days' notice shall be given by the Secretary.

ARTICLE III.

Five members shall constitute a quorum of the Executive Committee for the transaction of business, and eleven shall constitute a quorum at any meeting of the Society.

ARTICLE IV.

Should a vacancy occur in any of the offices, the Executive Committee shall be empowered to fill the same till the next annual meeting.

ARTICLE V.

The President's duty shall be to preside at all meetings of the Society, and see that the By-Laws are enforced and a proper decorum observed by the members.

ARTICLE VI.

In the absence of the President the Vice-President shall preside and exercise all the authority of the President.

ARTICLE VII.

The Secretary shall give notice of all special and stated meetings of the Society, and of the Executive Committee (on conferring with the chairman),

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keep a record of the same, keep a roll of membership, attend to the correspondence of the Society, and perform such other duties as pertain to the office.

Article VIII.

The Treasurer shall have charge of all funds of the Society, keep a strict account of the same, and disburse them on the order of the Executive Committee.

Article IX.

Any person may become a member of the Society on payment of one dollar, and be entitled to all its privileges. Honorary and corresponding members may be enrolled by a two-thirds vote of those present at any regular meeting.

Article X.

At each annual meeting there shall be elected Standing Committees on Fruits, Flowers and Vegetables: that on Fruits to consist of five members, the others of three each, whose duties shall be to report from time to time such matters of interest as pertain to their several departments, including the exhibits at any meeting.

Article XI.

These By-Laws may be altered and amended at any annual meeting by a two-thirds vote of the members present.

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MINUTES.

FIRST DAY—MORNING SESSION.

TRENTON, N. J., January 3, 1907.

The New Jersey State Horticultural Society opened its thirty-second annual session in the Assembly Chamber at the State House at ten o'clock this day. It was called to order by President Roberts.

Prayer was offered by Rev. George H. Bucher, D. D., of Pennington, N. J.

The President then called Mr. William H. Skillman to the chair, (Mr. Elias Black, Vice-President being absent), and delivered the following address:

President s Address.

HORACE ROBERTS, Moorestown, N. J.

Mr. Chairman and Members of the Horticultural Society:

It is my pleasant duty to welcome you all to this our 32nd annual meeting. One more year has passed away since last we came together,—a year of steady, earnest work, a year that has been a record breaker throughout the whole country in the total yields. Every paper we pick up tells of yields of grain so heavy that the railroads cannot furnish cars to hold them, nor motive power to move them; of demands for iron and steel, greater than the steel trust and all its competitors can furnish. Prices are advancing all along the line. We rejoice in the general prosperity of our country, but the question that interests us is, "Are we getting our share of the improved conditions?"

At first glance we would answer that everything a fruit grower has to buy has increased in price,—the labor charge, the fertilizer charge, the package charge, and the freight charge, while the price of our products has not always increased in proportion to the increased cost to us. We must remember that we are engaged in

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producing foods that are classed as luxuries rather than staples, and that a well-paid body of consumers all around us should be enough to infuse new faith and new spirit into all of us. Let us not forget the days of Coxey's army and the soup houses, when the farmers along the line of march had to feed the army and furnish the soup. Let us also remember that fruit is the first item to be left off the bill of fare of a family that is forced to economize. If we have not received our share of the general prosperity the past year, we will have to blame the unfavorable weather and climatic conditions and small crops for the shortage. This statement will amuse the Kieffer pear men, but I permit them to file an exception and I still insist that I am right.

There were not enough berries, cherries, apples, pears, (other than Kieffers), peaches, watermelons, cantaloupes, nor tomatoes raised this last year to properly supply the markets, and it is partly due to the advance in price of these commodities that increased wages are demanded all along the line.

How can you expect a Jersey fruit grower to rejoice greatly over the great crops of wheat and corn in the West, when he has had to put on gum boots or a bathing suit to gather his strawberries, and only gets one-tenth of a crop of apples, and half a crop of peaches, that he cannot market to advantage, owing to the wet weather? If our local conditions this last year have been unfavorable, should that discourage us? Not at all. Just as our fruit trees produce with renewed energy after a season of rest, so we should work with double vigor to make up for our shortages last year. Let us remember that though the careless and the shiftless fare well or fare poorly as chance decrees, the reward for the faithful is sure.

If the fruit growers of our State were only awake to its possibilities of development, owing to its soil, average climate and nearness to good markets, we would soon take a higher rank as a fruit producer. Our society is not large, but big enough for wonderful results if we could only stir up the enthusiasm here that the situation warrants, so that each member might be filled to overflowing with enthusiasm and go back home prepared by example and precept to stir up the whole community. Horace Greeley's advice to the young man, "Go West and grow up with the country," was good in its day, but it is out of date now. Land is higher in the far West than it is here, while most of the tricks and troubles *we* have, *they* have to an increased degree. As one leaves the seaboard, the

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winters get colder, and the summers hotter, droughts are more to be feared and storms of wind and rain play greater havoc, and even the insect life commits greater ravages in the inland states.

As one goes further from the ports of entry, the labor question becomes more unsettled, and it is more difficult to get the crops gathered at any price. Taxes are steadily increasing, but foreign corporations give us very substantial help, and the tax problem is less menacing here than anywhere else.

Any one, who has had experience in shipping products over a railroad 10 to 100 miles long without competition, can sympathize with a western grower who has to ship 500 to 1,000 miles. We have good markets all around us, near enough for us to know many of our customers personally, and still more of them to know us by name and reputation. There are few points in our State that are not within hauling distance of good local markets so that we are dependent on our railroads for shipping our surplus rather than in their clutches completely, as our western competitor is.

New Jersey has always been a pioneer in the fruit industry. For instance we were the first to raise peaches largely. The business proved profitable, then others began to raise them. Methods of transportation being made, markets began to rule lower and lower. The older sections of course first began to feel the inroads of insects and fungous diseases. Instead of fighting new and unknown enemies, the Jersey fruit grower retired from the business and peaches were raised on fresh, new soil in our neighboring states, where the diseases were as yet unknown. The same is true of other fruits. I can remember seeing the beautiful, fair New York apples in market selling quickly when our knotty, wormy fruit would hardly sell at all. The situation is now entirely changed, and the sooner we realize the change the better it will be for our pocketbooks and for the coffers of our State.

With the climate, the soil, the labor and the transportation problems all favoring us, and with good markets right at our doors we have reason to be enthusiastic. Our Delaware brother can no longer beat us on peaches, nor our New York friend on apples, and the western lands that were so fertile as to be classed as inexhaustible now have to be fertilized. Our position that enables us to market our crops to the best advantage also enables us to buy our fertilizers most cheaply. We can use the waste products of the cities and buy the German salts, the Chili nitrates and the Florida phosphates to help out.

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At our last session the subject of carrying freight on the trolley roads came up. Our body was united in favor of such a movement, and it was partly due to the active support given that movement by our members, together with the kindred organizations of our State, that such a law was passed. In history we read of great attacks on the old walled cities. Sometimes these attacks were successful and the garrison would then retire to the citadel and leave the city to the attacking party, who soon found their task had only begun, that they had gained a city they could not use, that they must gain the citadel before the victory could be complete.

It is just so with our trolley freight law. We fought our trolley freight bill through in good shape, but right after it the Legislature passed a limited franchise bill that defeated our wish entirely. The limited franchise bill has its good features. In large cities it may work well, but it has the tendency to create and foster monopoly. It has put a stop to not only trolley freight roads but almost every other public service project in rural communities. I trust that the present law can be modified this winter till it more nearly meets our needs, and I hope that our society will be ready and willing to help in this work.

A year ago when we came together some of us had the scale, and in some instances the scale had us. As I belong to the latter class I am going to relate my experience right along this line. The materials most used the year before by me were the crude oil, Scalecide and the lime, salt and sulphur wash. The crude oil was expensive, hard to handle and dangerous to the trees. The Scalecide killed 95 to 98 per cent. of the scale, but it washed off at the first rain and left the tree just right for the most rapid development of the few scales unkilled, and by fall the trees were more infested than ever. The lime, salt and sulphur wash was tedious to make, difficult to apply and acted slowly, and although it gave fair results on peaches and plums, it was commonly disappointing on apples and pears. My trees were so badly infested that I believed a fall spraying necessary to keep them alive till spring. I gave them a coat of Scalecide in the fall. About December 1st Van Alstyne, of New York, came along with the institutes and gave us a simpler formula for making the lime and sulphur wash and I began to use it at once. What was the result? The Scalecide killed nearly all the scale, the lime and sulphur did the rest. The summer before last my fruit was so scaly as to be hardly marketable. Last summer I had two fruit growers, members of this body, in the packing house when the

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fruit had been gathered in from all over the farm. I asked them to find me a fruit with a scale on. The one found a single apple with the red mark of the scale, the other could not find any. Gentlemen, it is our fault if the scale damages our fruit in the future. We have him on the run, now let us keep him moving.

The time has come when another pressing need should be attended to by our society and that is the revision of our fruit list. It has not been attempted for 10 years, and was not done then as systematically as would be best. Of course each session we take up the question box and discuss the new fruits, but we want something more general. If it is in order I would make a few suggestions, and that is we should vote in two sections, and also for two purposes, that of family use and market. Now, if I were voting on pears for family use I should put the Kieffer first. I believe I would put it first also for market. Now just see what a fine field is open for differences of opinion! How this recalls the historic days of Secretary Williams and Judge Parry. Each was true to his convictions, but if we put North Jersey in one list and South Jersey in the other list, ghosts of these departed champions will not molest us. I should suggest that each member should vote on the five most desirable apples to plant for market, and five for home use (not necessarily different for the first list); for the best three varieties of pears for each purpose, three varieties of peaches, two varieties sour cherries, one variety sweet cherries, two varieties of strawberries, and so on down the list of fruits and chestnuts. If our secretary had the proper blanks prepared they could be voted on nicely all at once. Now I acknowledge that we have members better able to give a list for planting than a list prepared in this way, but that does not prove such a list would not be both useful and interesting. Lists are often offered here and printed that we can not wholly endorse, nor are we called upon to contradict everything we do not agree with. A few years ago when an article was read here favoring raising fruit under natural conditions, that is forest methods, Mr. Hale, of Connecticut, was in attendance. He promptly suggested burning the paper and hanging the author before either did any further mischief. Such proceedings may do in Connecticut but we have to be more cautious.

One more subject should claim our attention, and that is our membership. We should get some scheme by which all the live, earnest fruit men of this State should be enrolled as members of this society. In our State, the cities are in the majority and it behooves us country

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people to hold together. We do not wish to interfere with what is none of our business, nor to trample on the rights of others, but we do want better marketing facilities and we want to increase rather than check improvements in our rural communities, and we should be in a position to make our wishes plainly known.

Now in closing I am going to refer once more to the secretary that served this society so long and so well, Secretary Williams. He was particularly incensed against those members who were as careful to keep their mouths shut as their ears open, who sponge-like absorbed all they could and gave out nothing. He styled them, "Growers for revenue only." But I say this that you are all welcome whether you are tongue-tied or not, and I invite you one and all to join in and make this meeting as it should be—the best in our whole history. I thank you for your attention.

Chairman Skillman: Gentlemen, you have heard the address of the President, one worth listening to. There are some suggestions made which I think it would be well for the proper authorities to take action on. I am sorry to say that the society has ignored to a large extent the suggestions made by the presidents in the past,— although perhaps in the past two years they deserved being ignored; but here are some in the address that we have just heard which should have some attention paid to them. A motion is in order. What shall we do with this able address, so well thought out and well written?

Dr. Ward: Mr. Chairman, I move that a committee of three be appointed to go over this President's address and make such recommendations as they see proper, to be reported to the society during this session. Motion carried.

Chairman Skillman: Who shall appoint that committee?

Dr. Ward: The Chair.

Chairman Skillman: Then I will name Mr. S. B. Ketcham, of Pennington, Mercer County; Dr. J. B. Ward, of Lyons Farms, Essex County; Mr. William H. Reid, of Tennent, Monmouth County. And I request that committee to meet and act on the matters mentioned in the address as soon as they can make it convenient.

President Roberts: The next matter on the order of business is the roll call of delegates. The Secretary will call the roll.

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The Secretary then called the roll of delegates. (Printed on pages 9-11).

President Roberts: The next thing in order is the report of the officers and committees. The first officer to report is the Secretary.

Secretary's Report.

MARY W. BUDD, Mount Holly, N. J.

Mr. President:—The usual duties of the Secretary have been fulfilled in the past year, and new work done which has developed with the progress of the society. As illustrating a part of the good work done by the society, the Peninsula Horticultural Society awarded a diploma to the New Jersey State Horticultural Society for a display of apples at their January meeting in Delaware.

Again the Secretary would emphasize the need of headquarters, where these diplomas and the reports, as well, could be enjoyed by all.

Twenty-two new members have been added since the last meeting, and but three deaths reported.

The society is familiar with the zeal with which its members labored for the passage of Senate Bill No. 91, giving street railways the right to carry freight by and with the consent of the governing body through which the lines pass.

In accordance with the resolution presented at the last annual meeting, letters were sent to all the New Jersey Senators and Representatives in Congress, asking their support of the Adams bill, which provided for an increase in the annual appropriations to the Experiment Stations. Replies of acquiescence were received from all, with the exception of two, who were not heard from.

Eight hundred copies of the report were printed last year, three hundred of which were retained by the State for the Book of Documents. There still remain about one hundred for distribution.

About seven hundred programs were distributed before this meeting, which we hope may bring a large attendance.

On motion the report was received and filed.

President Roberts: The next matter in order is the report of the Treasurer. Our Treasurer, Mr. Blackwell, is not well enough to be

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with us to-day, and he has kindly sent his daughter to represent him. We will hear the report as presented by Miss Blackwell.

Treasurer's Report.

IRA J. BLACKWELL, *Treasurer,* in account with the NEW JERSEY STATE HORTICULTURAL SOCIETY:

Dr.

1906.		
Jan. 4.	Balance on hand	$711 72
	New members' fees	22 00
June 23.	State appropriation	400 00
Sept. 11.	From New Jersey State Board of Agriculture	300 00
		$1,433 72

Cr.

Jan. 4.	Dr. J. B. Ward, Legislative Committee	$11 80
	E. S. Harfman, 100 plates	10 37
5.	James H. Romaine, entertainment of visitors	28 00
	H. W. Collingwood	10 00
	Janitor	5 00
	C. P. Close, speaker	3 05
	Dr. J. B. Smith	10 00
	Chas. W. Kimball, stereopticon	10 00
11.	Wm. Turner, speaker	6 00
	Samuel W. H. Waltz, speaker	9 25
	Chas. Black	2 00
	A. W. Slaymaker	7 00
25.	Secretary, expenses	2 69
26.	Dr. J. B. Ward, fruit list	33 00
	F. W. Gnichtel, stenographer	61 70
Feb. 13.	Secretary, for postage, expressage, etc	60 00
	Executive Committee's expenses	11 57
15.	Secretary, on salary	50 00
	Prof. G. F. Warren, speaker	10 00
19.	Arthur J. Collins, delegate	6 00
	Horace Roberts, delegate	6 01
22.	Dr. J. B. Ward, delegate and Legislative Com	19 76
	Henry E. Hale, delegate	2 40
Mar. 7.	William H. Skillman, delegate	17 08
23.	New Jersey *Mirror,* printing	6 00
	Stationery	12 50
June 4.	Expenses to Trenton	50
8.	New Jersey *Mirror,* printing	5 50
July 18.	Executive Committee's expenses	9 99
	Dinner	3 50

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Nov. 21.	Secretary, on salary	50 00	
27.	Chas. Black, delegate December, 1905	5 75	
	Treasurer, postage	1 14	
	Premiums on exhibit of apples	66 50	
	Premiums on exhibit of pears	16 00	
	Premiums on exhibit of canned goods	6 00	
	Premiums on exhibit of flowers	4 00	
			$580 06
	Balance on hand		853 66
			$1,433 72

President Roberts: What action will you take on the report of the Treasurer?

Dr. Ward: I move that the report be received and referred to an Auditing Commitee of three to be appointed by the Chair. Motion carried.

President Roberts: Mr. Blackwell particularly requests that any bills which are unpaid be handed in as soon as convenient. The next matter in order will be the report of the Fruit Committee, Mr. Charles Black, chairman.

Report of Fruit Committee.

CHARLES BLACK, Chairman, Hightstown, N. J.

Mr. President, Ladies and Gentlemen of the N. J. Horticultural Society:

In presenting this annual report, your committee has not been able to make it as full as it would like. It has been impossible to get reports from all sections. We will try and give a short and condensed report. I have reports from Burlington and Gloucester from members of our committee, as well as from Sussex from Mr. S. A. Miller which I will later submit as given by them.

The past season cannot be said to have been as successful as we would desire. For, while the winter was mild and fruit-tree buds and small fruits came out generally in good condition, with the exception of a few sections where a late frost in May did some damage, later conditions were not so favorable. The summer will be long remembered as one having the largest rainfall we have had for many years, and fruit growers lost heavily by rot and deterioration in quality. Of small fruits, *Strawberries* gave a fair crop. They suffered from drought in some sections and rain in others, but gen-

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erally gave a good and satisfactory crop. The well-tried varieties proved most satisfactory. Stevens' Late Champion has proven satisfactory in Burlington County and in South Jersey and may supercede Gandy as a late variety. The New Home sent out by Allen of Maryland, as a superior late variety, has not met expectations, but is worthy of further trial.

We had a full crop of *Red Raspberries,* and in Mercer County they sold at fair prices in the local markets. Excessive rain did some damage. Welch proved most satisfactory. It is a strong healthy plant on all soils fitted for raspberry culture, and is very productive. In color it is not as good as Miller, but the Miller is running down fast, and is no longer reliable. Of black varieties the Cumberland gave the best results. Kansas is also running down, which proves that it is a characteristic of most varieties of raspberries to deteriorate after a few years.

Blackberries gave us the largest crop for many years, but prices were not equal to those of the past owing partly to the excessive rains,—about $2.00 per bushel was the average price. The Ward and Eldorado where grown gave the best results. We get favorable reports from many sections where the Ward was grown. Dr. Van Fleet of the Rural New Yorker says that this is a blackberry year, but that the Ward is the best. William H. Skillman, our worthy ex-President, says that Ward has proved an excellent variety, and one of the best ever originated. Its strong vigorous habit fits it for light soils, where other varieties will not succeed; in fact it grows too strong and rampant on rich soil. I saw several acres in different localities on light sandy or gravelly soils during the past season. They bore immense crops of fine fruit and made a good growth of cane for next year.

Currants and *Gooseberries* where grown gave good crops and brought fair prices. *Grapes,* with but few exceptions were a failure, rot destroying nearly all. *Cherries* gave promise of a good crop, but most of the sweet varieties were lost by rot; the sour varieties did well.

Of large fruits, *Peaches* gave promise of a fair crop, but excessive rain prevented full development and caused more or less rot, more particularly with the mid-season varieties which are usually more exempt than the earlier varieties, but the reverse was the case this season. A grower near me lost about one thousand baskets in ten days. Some orchards and some varieties gave most excellent results. Your chairman had about two hundred four years old Miss Lolo,

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(an excellent early variety, ripening just before Mt. Rose), that yielded seven hundred baskets of fruit which sold in Trenton for five hundred dollars. Many of these trees were overloaded and hence broken down. Had they been properly thinned the result would have been even better. They were on very light sandy soil, and were fertilized with dissolved Rock, Muriate of Potash and Cow Peas. Some fine Iron Mountains from Hunterdon county sold at $2.00 per basket wholesale in Trenton. William H. Skillman, of Somerset County, reports a fair crop with considerable rot and damage by rain. We are not growing enough peaches for our local markets, but the interest seems to be reviving and more are planting hoping that they can control the scale.

The *Apple* crop was generally light, a few well cared-for orchards gave fair crops. Early summer and fall varieties sold well in New York and Boston markets. J. S. Robbins, of Allentown, Monmouth County, had a fine and profitable crop of Yellow Transparents on three hundred trees grown on light sandy soil. This orchard has done exceedingly well in the past, the fruit always coming smooth and perfect. This variety often fails on heavy clay soils. Central and South Jersey can do better by far with early and fall fruit than with winter varieties, which come in competition with the great winter producing sections that supply the large markets. We should grow only enough winter fruit to supply the local markets, for fruit that comes into maturity in September and October has usually sold well when better and later fruit sold for less. A grower in Middlesex County had a fine crop of Twenty-Ounce that sold for three dollars per barrel, but this variety needs strong soils.

With a few exceptions the *Pear* crop was unsatisfactory, especially in Mercer and adjacent counties. Kieffer gave an immense crop of generally inferior fruit. This was forced upon the markets and made matters worse. There was no time that Kieffers sold at fair prices in New York. There was a fair crop of Bartletts, but prices were much below last year. Leconte did not pay for marketing, although the fruit was good. To go through the markets and see the quality of fruit, especially of Kieffer pears that are sent there for sale, much of it not being fit for the swine, (for a well-fed pig would refuse to eat it if it were fed to him), is sure to disgrace the fruit grower and farmer as it casts a reflection upon his intelligence and shows an utter disregard of past experience. Such trash brings the grower no returns, puts his name in disrepute and totally demoralizes the market. Could this be kept out there would be a fair

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market for good Kieffer pears. After a long, close observation backed by practical experience, I am satisfied that the main cause of so many inferior Kieffer pears comes from permitting young trees to overbear before they have the root or top to bring out the fruit. As usually treated they commence to bear heavily at three or four years old, and before they are ten years old their vitality is exhausted and inferior fruit is the result. I have grown several orchards, (some two thousand trees), and my practice is to keep them growing wood by severe pruning, until they are seven years old, when they give me a good crop of fine fruit, and with care and proper soil they continue to bear several years. I have an orchard of three hundred and twenty-five trees that are eight years old. This gave me 350 barrels of very fine fruit with very little rust or cloud, which was so prevalent the past year. These same trees gave me two hundred barrels in 1905, their first crop. Of this year's crop I put 285 barrels in cold storage in New York where they are now selling slowly at $2.50 per barrel, which is much below the usual price, and looks as if the markets did not want the Kieffers, no matter how fine, when there are plenty of cheap apples as there are at present. The best report of sales of Kieffers during the past season comes from William H. Skillman who received $2.25 and $2.50 per barrel, gross. We want to do away with all trees that bear inferior fruit, especially Kieffer pear trees, and grow only good fruit. Blight has been unusually severe during the past season, and has destroyed large numbers of pear trees.

The crop of *Plums* was very light and nearly all lost by rot. Skillman, our champion plum grower, reports one-half crop of Red June, and 20 per cent. crop of Wickson, and all others a failure from rot. Price ranged good. Scale and rot has done much to discourage plum growing. *Quinces* are not much grown and the crop was very light. The crop of cultivated *chestnuts* was large. The weevil is very destructive and where it is possible, chickens or hogs should have the run under the trees at time of ripening, thereby getting rid of many of the grubs. It would also help if the rubbish under the trees were burned or taken off.

The scale increased very fast during the past fall and where only a small percentage of the old ones were left they have covered the trees again. After thorough trial I have confidence in the soluble oils, especially Scalecide; while no more effective than some other remedies it is more simple in preparation, and where thoroughly applied at the rate of one gallon to fifteen of water it does the work.

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After close observation I find failure due to imperfect application. It is very difficult to cover every scale, especially on large trees. To be sure of covering every scale it should be applied from at least three sides and well underneath the branches, and where there is any doubt a second application is a wise precaution. Late fall is the best time. Avoid wet or freezing weather. By constant care and fighting we can keep down this greatest enemy to the fruit grower and succeed in producing good fruit.

Howard F. DeCou reports:

Fruit trees and plants generally came out of the winter in good condition. *Raspberry* tips were injured some but not enough to prevent full crop. *Peaches* gave promise of an abundant crop, most varieties such as Mt. Rose, Old Wixon, Bell of Georgia, Elberta and Fitzgerald yielded good returns, while Champion and some of the softer varieties rotted badly. The Champion in other respects is a very fine large peach and yields well. The Elberta still holds first place for profit while the Bell of Georgia bids fair to be a good second.

Most of the large *apple* orchards in this section have been ruined by the scale. Those who had fancy apples realized good prices, while second grade fruit ruled low. The Stayman Winesap and Rome Beauty are rapidly coming into favor as late apples.

Kieffer *pears* produced an abundant crop, most of which was of good size, yet more cloudy than usual. The first marketed fruit brought fair returns, while the later ones in many instances did not pay for the marketing. Those in cold storage seem to be doing much better. LeConte did well, selling for 40 cents in 5-8 baskets. Bartletts had a fair crop of good fruit selling from 50 cents to $1.00 per 5-8 basket. We are fighting the scale mostly with the soluble oils; some few still cling to the lime and sulphur wash with good results.

The *grape* crop was a little below the average, the Concord still being the favorite for market purposes, while the Champion paid well where an early grape was desired and quality did not count.

Most *plum* orchards have been taken out, being considered failures; the few that remained had a fair crop.

The *chestnut* crop was very heavy in both the natural and cultivated trees. The Paragon being the most desirable of the cultivated varieties.

In small fruits the *strawberry* crop was injured by the drought,

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especially the mid-season varieties. On account of the failure of the strawberry crop in the South, the early berries sold very high, the Success being remarkably profitable. The Stevens' Late Champion again was our best late variety and yielded a large crop of big berries, which sold well. The Gandy is rapidly losing in favor with us, nearly all planting the Stevens to the exclusion of all other varieties.

Raspberries yielded a heavy crop, although prices ruled low, the Welch being the leading red. There is great need of a productive bright red raspberry, as the Welch is our best, yet it turns dark very soon. The Miller commands a higher price, but it will not give us the pints. The Phenominal proved to be a failure.

Blackberries had a good crop, although injured some by drought. The Maid gave best returns with Ohmer coming next and Eldorado third. Prices ruled high.

Dewberries had a fair crop; the Premo outyielded the Austin and Lucretia. The Austin being of fair size and very early, the Lucretia a few days later, very large and juicy.

Currants have been planted quite largely of late, principally the Pres. Wilder, which has large bunches of big bright red berries, and is very productive. Of the newer varieties I might mention the Filler and Prince Albert.

There was a large crop of gooseberries again this year, which sold from 7 to 8 cents per quart, wholesale. The Houghton and Downing are generally grown and are being planted extensively.

Albert Repp, of Gloucester County, reports:

This has been a trying year for the fruit growers in this section. Fungus and Blight have been very bad.

Apples.—They were very light in this section this year, although we had a crop up to the average of other years. We were troubled with the Fungus very badly this year, and we must spray more for this trouble. Apples sold very well up to the time New York began to ship winter fruit.

Cherries.—The largest crop for years, quality very fine and prices fair.

Grapes.—A fair crop; rotted very badly except those which were sprayed. Prices good.

Plums.—Good crop but rotted very badly. Prices were fair.

Peaches.—There was a very good crop in this section. They rotted very badly, except the orchards that were sprayed with Bordeaux

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mixture, which produced fine fruit, and good prices were received from those.

Pears.—The blight this year was very bad, it started when the trees started to bloom going through the whole season, killing them in the trunk as soon as the crop was harvested. We lost several hundreds of Bartletts and Seckels. The prices were very good. We harvested 2,000 barrels of Bartletts, the prices ranging from $5.00 to $8.75 per barrel. Also 200 barrels of Seckels, 700 barrels of Duchess, 400 barrels of Lawrence, and 900 barrels of Kieffers.

The scale is destroying many orchards, but the ones set out in the last few years are well taken care of. We had less scale this year than for the past eight years. Quite a few orchards are being set out in this section—mostly Winesap apples and peaches.

J. L. Lippincott, of Burlington County, reports:

The general conditions of orchards throughout this section is very discouraging to the average grower. The acreage as compared with ten years ago is very much reduced, due to the San José Scale. There is, on the other hand, an encouraging side to fruit growing for the intelligent grower. The orchards which have had careful treatment show the scale can be controlled and good fruit grown, for many badly infested in the past are to-day bearing good and profitable crops.

The fight against the scale has indirectly made the man who has controlled it a better fruit grower, as he has given every department of the business more careful and intelligent attention. The spraying with insecticides and fungicides has made a marked difference in the character of the fruit we see in market. The result to the grower has been equally gratifying, as, for the past few years there has never been a time when good fruit, properly handled and packed in attractive packages, has not yielded remunerative prices.

I suppose I will be criticised for including the Kieffer pear in the above category, but I do include it and feel the results justify it. It is one of our most valuable fruits in Burlington County, especially so where it is grown on congenial soil. The past season has been a striking example of the advantage those gain who grow Kieffers on light soil, as their fruit with its bright, rich yellow skin has been in striking contrast to that grown on heavy lands. This, however, is not entirely due to the character of the soil, as many orchards with ideal soil conditions produced very poor fruit, due in many

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cases to the over-crowding of the trees, admitting little or no sun to the fruit.

Upon apples as a class it is decidedly more difficult to control the scale, and some varieties seem to be much more a prey to it than others. The acreage planted in apples in some sections of the county in the past ten years has been considerable, but it has not kept apace with the axe. However, this is not discouraging to the fruit grower, but rather the contrary. I think you will find it hard to find a man, who has planted on a considerable scale, who is discouraged from the present outlook, as for the energetic, intelligent fruit grower, it was never brighter in the State of New Jersey. Don't stop, however, with the growing and perfecting of your fruit, as the style of the package and care in packing are half the profit.

There is no section in the United States where the fruit grower has the advantages of such markets as are at our very door, but we want to cater to the demands of our markets, and not throw great quantities of indifferent fruit mixed up with the perfect on them, and try to make the good sell the poor.

S. A. Miller, of Sussex County, reports:

All fruit crops were rather light in Sussex County the past year. Apples about 60 or 75 per cent. of a full crop and quality fair. Only the extreme northern end of the county is now growing peaches commercially. The yellows, the scale and neglect have destroyed all the fine peach orchards of ten or twelve years ago in the central part of the county, and the growers are too discouraged to set anew and have gone back to the dairy. But there is no doubt in my mind but that they could grow as good fruit as ever if they would plant good stock and take thorough care of them, cultivating, fertilizing and spraying. In fact a few men are demonstrating that this is true. Scale is in nearly every orchard, both peach and apple, and has practically destroyed the trees and bushes in village gardens, and many farmers in the future will not have fruit enough—even apples—for their own use.

Cherries were a light crop and rotted considerably.

Pears were quite plentiful, but Bartletts were unusually poor.

President Roberts: The report of the Fruit Committee is now open for discussion.

Mr. Charles Black: Mr. President and gentlemen, I would like to say one thing about this Kieffer pear business. I have

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no doubt but that a great many people will say I grow my trees too long before I fruit them. But they are small trees, and some of the larger trees yield as much as three barrels. If I had allowed those trees to bear when they were only three or four years old, they would have loaded themselves down so badly that this year they could not bear any fruit. You can go through the country and you will find many trees that are not over eight years old filled with fruit which would not bring anything at all in the market,—perfectly worthless. You must get size to the tree, and get top and root enough to sustain it if you want good fruit. If you do not let them bear until they are old and large enough, they will give plenty of fruit and pay; if you let them commence to bear when they are still young, and just give them ordinary care, they will bear a fruit that will be worthless.

Mr. Skillman: I would like to emphasize that point in Mr. Black's report, and I agree with him. Mr. Black is always right, except when he disagrees with me. But sometimes we do agree, and then I know he is right. I agree with him particularly in regard to the Kieffer pear in not letting them bear too young. I think letting the trees bear too young uses up their vitality.

Dr. Ward: I think all Kieffer pear growers will agree that it is a rapid grower and shoots off in all directions, making too much wood. I have a Kieffer pear orchard on my place which was planted perhaps twenty years ago, and yet those pears this past year were as fine as any that ever grew on my place. They were large and first class pears, with very few seconds, and they colored up handsomely. I feel very well satisfied with them. There were hundreds and hundreds of barrels of them grown which brought anywhere from sixty cents to a dollar a barrel. My practice has been every year to go through and cut off about two-thirds of those trees, and in that way I keep my trees close and compact and they do not overbear. I do not know how much longer they are going to bear, but they are still very satisfactory. One of our great mistakes is we allow too much wood to grow, and then, as Brother Black says, the trees exhaust themselves.

Mr. Kerr (of Maryland): I would like to inquire of my friend, Mr. Black, whether or not the thinning of the fruit on those trees would not be as likely to produce good results as the retarding of the bearing? When they are permitted to load themselves down with more fruit than they can possibly develop, as a natural consequence, the fruit must be inferior, but if they are thinned out and

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properly cultivated, I cannot just exactly get at the philosophy of keeping them so long out of service.

Mr. Charles Black: Probably they have cheaper labor in Maryland than we have. We cannot afford to hire the men to do it. I have no doubt at all, from my personal experience, that I get as much or more in ten years from my trees, as I would if I allowed them to commence to bear when they are three or four years old and thinned them out. The only way to keep trees down is to prune them, and if they are growing all the time they will overload themselves and soon exhaust the trees. When you have Kieffer pears that will bring only from fifty cents to a dollar a barrel, I think it does not pay.

Mr. Kerr: In professional avocations, they make use of shorthand; for instance in court proceedings and such as that, they get at the findings by shorthand processes. This thinning out of Kieffer pears in some places they have done by the adoption of a shorthand method of thinning; take a good, healthy vigorous man and have him shake the fruit off of the trees, so that the labor expense would not amount to much.

Mr. Charles Black: In that case, you may get them all off of one limb and leave them on another, and that would be very unsatisfactory. You do not want to let Kieffer pear trees bear fruit when they are two or three years old, because they will not bear any fine fruit. The only thing is to prune them and keep them down and in that way you will get stronger trees and they will develop larger fruit.

Mr. Harrison (of Maryland): I disagree with Mr. Black in that and, as we are after facts, it is necessary to state it. We have an orchard of nine hundred Kieffer pear trees. It is six years old now. When they were four years old they gave me a crop of six hundred baskets; when they were five years old they gave three thousand baskets, and this last Fall, we had a little more than nine thousand baskets. The orchard netted last Fall $1,075, and I still have about six hundred baskets in cold storage in Philadelphia. We have cultivated in this orchard each season some green crop and keep it thoroughly cultivated. Each tree has been pruned every year. We prune the trees, fertilize, cultivate and spray them each year, and the trees are, I think, as strong, and even better prepared to go into winter and for another crop than they were at the age of three or four years. I think you can do it by cultivating, fertilizing, pruning and then spraying, and then when the fruit comes,

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if it happens to be thick, thin out. We went through and gave a shake to each tree, and that can be done at very slight expense. I think it will be found profitable to start them bearing at an early age, and then give them good treatment so that they will continue.

President Roberts: I agree with you, Mr. Harrison. We will not try to convert Mr. Black on this. If there are any other points in this Fruit Committee's Report which you wish to discuss, we will take them up.

Mr. Kerr: There is another point on which I would be very much obliged to have a little enlightenment. The Chairman of the Fruit Committee recommends the turning of the hogs into the chestnut grove at gathering time. As I understand it that would be a ruinous process to our chestnuts, because they will get all there is on the ground,—there is no way of directing them. They are not discriminating enough to eat only the decayed ones.

Mr. Charles Black: Get the chestnuts first and turn the hogs in afterwards. That is the best way.

Mr. Skillman: Mr. Black referred to Jersey hogs, not the kind they have down in Delaware.

Dr. Ward: I just want to corroborate what Mr. Harrison said about the condition of those trees. My little trip down on the Peninsula paid me twice, three times, yes, a hundred per cent. I have been growing fruit all my life, but I found that I was "away back." The object lessons that I received down there were very useful, not in Mr. Harrison's place alone, but all through that Peninsula.

President Roberts: You are planning to give us a report of that trip, are you not?

Dr. Ward: Yes, but that will come later. We were just speaking of Mr. Harrison's place, and while we were on that subject I wished to corroborate what he said. The deep luxuriant green growth all through his ground was something good to see for a fruit grower. I can readily see how he received those large returns from his fruit.

President Roberts: Are there any further remarks on the subject of this report? If not, a motion will be in order to dispose of the report.

On motion of Mr. Hale the report was received and referred to the Executive Committee.

President Roberts: We are fortunate in having Dr. Smith with us to-day. It is not likely we will have him with us to-morrow. If anybody has any questions to ask of Dr. Smith, if they will put them

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in the question box to-day, the Doctor will try to answer them. The next matter in order is the report of the Flower Committee, Dr. Walter Van Fleet, Chairman.

Mr. Lovett: Dr. Van Fleet has a slight cold and has requested me to read the report.

Report of Flower Committee

DR. WALTER VAN FLEET, Chairman, Little Silver.

The season of 1906 was on the whole remarkable for high average temperature and excessive humidity. About every month of the year, with the exception of August and possibly December, ran above the average showing a total excess temperature for the year of over 600 degrees. The first half of the year was about normal as regards rainfall and cloudiness, the latter half was exceedingly wet and gloomy, in most parts of the State. Vegetation generally made rank growth and floral displays were very fine, except with geraniums and bedding plants that thrive best in moderately dry weather. Fruit blooms were very abundant except on some varieties of apples, and had generally favorable weather for development and pollenation. A few apricots and certain of the earliest flowering plums, such as Wickson, had blooms injured by frost. Peaches had a splendid bloom but the crop did not turn out as well as expected on account of rot. Cherries had favorable, warm and dry weather during bloom and the crop was the best in several years. Grape blooms were severely injured by the rose beetle, which was also very destructive to chestnut catkins. Small fruits had generally favorable weather for their bloom and the crops were above the average, except with a few early strawberries, the flowers of which were injured by frost. Roses and flowering shrubs suffered greatly from the over-powering attacks of rose beetles which came in uncounted numbers and disfigured the blooms of even the late red varieties, that had always escaped in former years.

Hardy flowering plants in general made magnificent displays and are steadily growing in favor. One of the best novelties in this line is Astilbe Davidii, a giant herbaceous Spiraea from Western China. It has finely cut foliage and sends up rosy-purple feathery flower-heads, five feet high in August. It is entirely hardy and long lived. Blooming as it does after the rose beetles are gone, it makes a grand exception to the Spring-blooming members of the

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genus. Impaticus Holstii is an excellent new window and bedding plant. It may be used in place of the scarlet geranium and is a most constant bloomer.

Glasshouse florists have had a generally successful year. Prices have been good and the demand occasionally exceeded the supply. The gloomy weather at the close of the year greatly shortened the cut of roses and carnations just when the demand was greatest. There was much anxiety in early Spring over the possible shortage of fuel that would follow the threatened coal miners' strike but this was happily averted. Express rates on cut flowers have been arbitrarily raised causing much hardship to shippers who are forced to rely on this means of transportation for their rapidly perishable products. An effective National Parcel's Post is urgently needed and would prove a great boon to all horticultural interests.

The growing of greenhouse products, both vegetable and floral is a most important industry in New Jersey. Some of the largest and best conducted establishments in the country are to be found in our State. The building of new structures is however much hampered by the inordinately high cost of glass, directly due, it is believed to our excessive duties on foreign imports. Domestic manufacturers of glass show no disposition to make concessions to the building demand, but continue to exact the last cent of unreasonable profit. It is believed a material reduction of the tariff rates on glass would have a beneficial effect on the home industry.

A new and very serious menace to ornamental horticulture is dust raised by speeding automobiles on suburban and county roads. Owing to the rainy summer the nuisance was not as evident the past season as it may be in the future, but thousands of country residents were forced to endure the disfigurement of their gardens, dooryards, hedges and trees with filthy and disease-breeding dust. There is little incentive to plant flowers and ornamentals if one's premises are constantly bathed in dust and grime during every period of dry weather. The low bodies of modern motor vehicles and the rapid speed at which they are run create a strange suction. Clouds of dust are drawn into the air to be driven by every breeze over the adjacent fields and about every nearby household. Not only is great damage done to ornamentals, but fruits and vegetables are rendered unclean and unmarketable. Hay, from grass cut near country roads much used by automobiles, is found to be so dusty that horses and cattle either refuse to eat it or have been made sick by it. The market is now beginning to sharply discriminate against such hay.

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The motor vehicle laws should be revised and drivers forbidden to run at any speed likely to raise more dust than ordinary horse-drawn vehicles in dry weather, and on ordinary dirt or stone roads. Speeding should only be allowed by law on roads especially oiled or sprinkled for that purpose.

Mr. Chas. A. Black reports:

One more year has passed into eternity and 1907 is at hand without any particularly new events in the floricultural realm, at least in this section. Of any other I have little knowledge for lack of opportunity, therefore I will confine myself principally to this vicinity. I will simply state that floriculture is very limited here being confined principally to Carnations and Violets as cut flowers. Carnations are grown pretty much in the old usual way, that is transplanted from field to houses about the first of September. They have done very well this past season, both in and out of doors excepting some stem rot that developed owing to excessive rain. I understand this has been the case in a great many sections this season, more especially in the great carnation belt of Pennsylvania. Some of the old varieties are still with us as "standbys," such as Louise, Joost and Lawson, but the latter we believe is deteriorating like its predecessors. The Lawson sprouts are tried along with other new varieties of which a few are grown each year, occasionally one proving worth retaining. With most of us Enchantress is a wonder, some of which can be seen here as fine as any where, we believe.

We have some modern built houses such as the short span sectional houses, cement beds and so on. It has been said by some of the prominent growers that "carnations do not bloom as freely in winter in solid beds as in raised benches." I wish to state that we see no difference as far as our experience goes. There are now about 40,000 sq. ft. of glass devoted to this divine flower, Philadelphia being the principal market, and according to reports they are bringing excellent prices this season. Personally we grow a few seedlings each year as a hobby getting some very promising varieties occasionally.

As to violets the Campbell (double) and the California (single) are grown exclusively, the latter being used for decorating the doubles. There are about 60,000 sq. ft. of glass devoted to violet culture, indoor culture being practiced principally. Except in a few instances they have done very well thus far this season, except coming into bloom late. There are now about seven growers of Violets.

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This industry has grown considerably the last ten years, all grown on pretty much the same plan, indoor culture and solid beds. Good prices are reported in most cases, Philadelphia being the market. A few annuals are grown such as Geraniums and other old varieties of flowers. It has been a little wet for a great many of them this season, but suited Dahlias, Cannas, etc.

Mr. Lester C. Lovett reports:

Hardy Perennials, which have sold well in the New York cut flower market during the past year, were Peonias, Japanese and German Iris, Giant Flowered Gaillardias, Coreopsis Lanceolata, English Delphiniums, gypsophila paniculata, Miss Lingard Phlox, Veronica longifolia subsessilis and the different varieties of Tritoma. Pyrethrums should be grown more than at present for cut flowers. They thrive in our climate and the best named varieties of the double ones are indeed beautiful.

The best Hardy Perennials of recent introduction are, Astilbe Davidii Gypsophylla paniculata fl. pl., Boltonia latisquamaea nana and F. G. Von Lassburg Phlox.

The best selling cut blooms of Hardy Shrubs are Spiraea Van Houttei, Viburnum Plicatum, Weigelas, especially variegated, Robina Hispida, double Lilacs and Hydrangea Paniculata Grandiflora.

The most profitable Dahlias to grow for cut flowers are Kriemhilde, Britannia, Perle d'Or, Countess of Lonsdale, Clifford Brutton, Strahlein Krone and Wm. Agnew. The single varieties do not sell well, except the Century collection, which bring very fair prices. Luther Burbank's new introductions of Dahlias were very ordinary.

Gladioli America is a very good pink variety, in color very similar to Enchantress Carnation. Mrs. Francis King is another very fine sort.

Sweet Peas did not do well during the past summer by reason of the excessive wet weather. I find that by using a moderate quantity of nitrate of soda the size of the bloom is much increased.

During the past year, growers of cut flowers, under glass, have had a very favorable season, except during the summer months and early in the fall, at which time Roses and Cornations sold at much lower prices than usual at that time of the year. During November and December prices were exceptionally high and stock very scarce.

Richmond Rose has proved a very fine sort; it has but one noticeable defect and that is that it opens very quickly. The same

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might be said of Killarney, which is now being grown by a great many florists in preference to Bridesmaid.

A great number of new carnations were sent out in 1906, most of which proved valuable. There were so many good ones sent out that it would be tiresome to name them all.

During the past year, growers of cut flowers in this State have been compelled to pay excessive express rates, almost double the rates previously charged, and also to pay for the return of empty boxes, for which they were not obliged to pay previously. This matter was taken up by the S. A. F. O. H. at their convention, held at Dayton during the latter part of August, but nothing has been accomplished as yet. However, they have not ceased their efforts and it is hoped that these rates will be reduced within a short time.

The convention at Dayton was a very successful one; nearly 50 members leaving on the special car from New York alone. One more important matter was taken up by the Society and that was in regard to the Parcel's Post.

King Humbert Canna, exhibited by Vaughan's Seed Store and growing on the convention grounds at Dayton, created more favorable comment than any other growing out-door exhibit. There were many new varieties of ferns in the indoor exhibit, noticeable among which were, the Whitmani and Amerpholii ferns.

The disease which has been attacking Asters so badly the past few years was worse than usual during the past summer and it is to be hoped that a remedy will be found to combat this disease. Another very choice plant which suffered very greatly from fungous attacks the past summer was the Hollyhock.

Owing to the excessive wet summer just passed, Geraniums were almost a total failure along the sea coast. Telegraph and Tiffin Geraniums, by actual test, proved unsatisfactory along the Jersey coast. E. H. Trego was found to be one of the best, if not the best, Scarlet Geranium yet tested for bedding.

Miss Jessie L. Colson reports:

The season of 1906 was an unusually rainy one for South Jersey. All kinds of vegetation, both wild and cultivated produced an abundance of green foliage and a superabundance of blossoms. However, the numerous rains and lack of sunshine delayed and somewhat spoiled the matured products of fruits, flowers and seeds. The peach crop was very large but 50 per cent. must have rotted on the trees before maturing. Late cabbage produced numerous green

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leaves but did not head. Wheat stacked outdoors or left to be thrashed in the field was ruined by the muggy weather. I never remember a season producing such an abundance of grain, fruits, and flowers, and one without a drought except a few weeks in the early planting season .

Annuals and biennials throve alike. It was almost impossible to cultivate the soil on account of the weather, but wild and cultivated crops throve equally well in the same field. The harvesting was most difficult on account of the weeds and weather: however, it was bountiful. This report covers only the dairy soil of South Jersey.

President Roberts: You have heard the report of the Flower Committee, what action will you take on it? It is now open for discussion.

Mr. Hale: I move that the report be accepted and referred to the executive committee. Motion carried.

President Roberts: The next matter in order is the report of the Vegetable Committee, Mr. Howard G. Taylor, Chairman.

Report of Vegetable Committee.

HOWARD G. TAYLOR, Chairman, Riverton, N. J.

The season of 1906 was especially notable for its contrasts in atmospheric conditions and their effects on the growing crops. Early in the spring it was so wet and cold that some early peas rotted in the ground, later dry weather followed, so severe in places, that it was difficult to secure a good stand of young plants. This condition lasted on into June, so that early peas were badly injured on the lighter soils, and the clover crop was cut very short. Then all through mid-summer it rained so steadily that many acres of low lands failed to produce anything, and crops on the uplands were also injured, especially yellow corn on sandy land.

While the season as a whole may be considered to have been a good one for the majority of vegetable growers, many will find the net results disappointing, as the cost of securing the deficiency in hay and corn will make a very material reduction in the receipts for the year. While the reports received show good results from the season's labor, I am satisfied that reports are from the successful ones, or else they have had better success than we have had in Burlington County, where the excess of moisture was so

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great. Without going too much into detail we can only refer to the main features of the principal crops.

Peas were profitable when placed in market at the fortunate times, and where they were not injured by the dry weather.

String beans sold very low, except for a few extra early ones that brought good prices.

Early cabbage was again nearly destroyed by the root maggot in our section. Some experiments made by direction of our State Entomologists seem to point to the necessity of using some repellant as soon as the plants are set in the field, hellebore, tobacco dust and even sand and kerosene having a good effect.

After the eggs are placed on the root and hatch, the various emulsions seem to have little result.

Well grown *asparagus* sold readily at good prices and again emphasizes the necessity of growing the best every time, to get good returns.

The extra early *sweet corn* sold well, but was hurt by the dry weather, but the later plantings of varieties of sugar corn met with lower prices in Philadelphia and also in Jersey City. The new variety from the Experiment Station, Voorhees Red, is highly spoken of for its superior quality and the dwarf Russian Malakoo, for its extreme earliness. One correspondent says, "I placed it on my table 62 days from day of planting."

Many *white potatoes* were lost from rotting wherever the water formed ponds, but sold at good prices early.

Early *tomatoes* were a short crop, but brought good returns, except for a short time, the main plantings yielding a fair crop only, but sold for good prices, so that my predictions of one year ago, for a glut in the market, were fortunately not realized.

Lima beans promised great things early in their season, but the excessive rains curtailed the main crop, later they bore again so that we had them till frost destroyed the vines. Dusting with lime and sulphate of copper helped to hold the mildew in check, though not used as freely as it should have been. Prof. Close in his address last year gave a very practical way of reducing the copper fine enough to mix with lime dust, (see page 91 report for 1906).

Sweet potatoes yielded well generally, but the loss from fungous troubles, both in the field and store house will be enough to reduce the profits greatly. They are selling slowly for some cause in the Philadelphia markets at 50 cents per basket.

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Beginning with Cape May county Mrs. E. S. Starr presents the following report:

The situation in Cape May County is an object lesson rare in the East of the effect of lack of facilities for transportation upon horticulture.

One of the oldest counties in the State's records, with an unsurpassed market in the demands of the kitchens of its shore resorts and with the country's best distributing centres within a day's journey by modern methods of travel, with soil most easily worked and cilmate that while mild in its latitude is made more so by the proximity of salt and fresh water, and yet the broad area especially of the eastern portion is still in woodland and savannas, the only cultivated portions being that close about the occupied dwellings. The main products of the county continue to be oysters, clams and summer boarders.

But a change is making. Good roads to and from the mainland are demanded by the summer resorts and automobile travel, and they are being built; a trolley system is necessary to boom the new towns capitalists have upon paper, and better service by steam and electric lines was called for by business men, and although the interests of soil owners were not considered they will be first to be served and so being the benefits to the rest will follow. The change in the horticulture will be well worth watching. There will be no ventures as the small undertakings have shown of what the soil is capable and the crops that will prove profitable and that all the year round work can be safely entered upon and thus the help problem be solved.

The shore resorts give an unequalled market in that demand is at a season when the natural growth is most abundant, is easiest grown and at least cost, and, in being sold direct to the consumer and at a little better than the ordinary retail price, considerably widens the margin of profit. The growing being almost wholly for a seasonable market, there is no attempt at forcing except as the greenhouses at the Woodbine school supply cabbage, tomato, pepper and salad plants. Indeed so strictly to the season do the growers keep, that in the early spring one must send to Philadelphia for parsley.

The past season in its peculiarities of weather, held much of disappointment as well as profit. Spinach the earliest green was in good form and quantity, an unusual demand being fully met. Early peas suffered from drought and late peas from too much moisture. Early cabbage and tomatoes were failures, but midsummer and late

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varieties of tomatoes were in abundance, excellent in quality and good keepers. An unusual demand for green tomatoes for pickling kept prices good to the last, and by guarding the plants through a cold spell in early autumn the open weather permitted them to keep in bearing until in November.

Asparagus is in comparatively small plots and generally well cared for to protect from rust and beetles. The wagons show very little of the newer varieties the product being usually of old beds kept young with care, and is green rather than either naturally white or blanched.

Help for field and garden is hard to get and when imported—owing to mosquitoes, gnats and "chiggers" impossible to keep. Women and children are pressed into service when other conditions will permit, but much that is planted in good faith is perforce left to be choked by weeds and to serve as hosts for insect pests.

The usual summer vegetables make up the planting, there being little difference in the loads. The scarcity of help and the limited carrying capacity for the long hauls over the heavy and sometimes submerged roads caused only the best of the growth to be gathered. There was thus an involuntary grading that won great praise for the seaside tables and a regret for the return to the inferior qualities to be found in the home markets.

The banner crop thus far for the eastern portion of the county has been lima beans. Beans of all kinds do exceptionally well as a rule, except where authracnose has come to the soil from infected seed, and where the flea beetle is in control, but the lima is said to succeed better than in other portions of the State, and that it does so is as much a surprise to the growers as to others. It is without doubt location and atmospheric conditions peculiar toil. For two years past the excess of shore demands has been sent by a few growers to New York and Philadelphia firms, and each shipment has received better than the prevailing prices, and with the return checks came urgent demands for more. Both the pole and the bush are grown, but the former is the favorite. The area in limas will be greatly extended the coming season. Fully a quarter million poles one grower estimates will be added, judging from the cutting done this fall and winter.

Melons are looked to as the special money crop. Offered from the wagons in the streets of the shore resorts, load after load is quickly turned into cash. A long season is usually prepared for in successive planting of muskmelons, but the past season with its

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unusual weather spoiled these plans. The entire crop of musk-melons ripened about together, and being over with in less than a fortnight gave a glut in the market, and tons of luscious fruit to rot in the fields. Watermelons were also a disappointment as a rule, the early seeding being lost and the crop grown from the replanting. The few fortunate ones with early fruit secured the prices the scarcity warranted their asking, the main crop being too late to be more than fairly profitable.

Insect pests usual to the vegetable garden are all present. The corn and cut worms have been reduced somewhat by catch crops in the autumn destroyed before the creatures could escape. Lice if taken in time are said to yield to finely slaked lime. The flea beetle and rose bug, it seems to be generally conceded, "will yield to nothing," hence "nothing" was very generally tried. It is, however, reported that where decaying fish has been used as a surface dressing, a fly has come with it before which the rose bug finds no excuse for remaining.

Although a profitable future for the county in its horticulture seems assured, and soon travellers through it will cease asking, "Where the Barrens' end," but cultivated fields will be everywhere, and large tracts with buildings instead of begging for tenants who will pay the taxes for their occupation, will command good prices for the sake of the product of their soil.

The growth of the grange is having its influence in bringing owners into closer relations and must result in united action for the general good where hitherto there has been pulling apart and cutting in.

From Monmouth County, Wm. H. Reid, says:

"With us the early cabbage headed finely, while the late crop was almost a total failure, could hardly find one good head out of 100 plants. Potatoes, about 85 per cent. of a crop, prices at producers' stations from $2.50 to $1.00 per barrel at the time of lowest prices." He encloses the following from E. A. Sexsmith:

"In this vicinity, the past season was not the most favorable for the growth of vegetables. We had a number of violent showers which did a great deal of damage to small growing crops as lettuce and spinach. Sweet corn, tomatoes, egg-plants, melons, cucumbers and limas were all affected quite seriously by the constant wet weather. All of these crops were short. On the other hand prices were very good so that on the whole the financial results of the sea-

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son were quite satisfactory." Then follows his statement for his prices, mostly in a retail market, I infer from Mr. Reid's letter:

Asparagus. Crop fair. Average price, $2.50 per dozen bunches.

Beets. Crop good, price fair, average $2.50 per c. bu.

Cabbage. Crop good where not injured with maggot. Price very good during the whole season, from $1.25 to $1.50 per bbl.

Carrots. Crop good, price fair, $2.00 per c. bu.

Cucumbers. Crop very poor, price extremely high. Average $1.00 per ½ bu. basket.

Egg Plant. 75 per cent. of crop, price 40c. per ½ bu.

Lettuce. Very poor crop. The quality so poor that price ran low.

Muskmelons. 75 per cent. of crop, prices running from $3.50 to $4.00 for whole season.

Onions. Fair crop, price $2.00 per bbl.

Peas. Good crop, price 75 to $1.00 per bu.

Sweet Corn. 60 per cent. of crop, price very high, averaging from $1.25 to $1.50 per c.

Tomatoes. Fair crop, but ripened slowly and in poor shape, price from 40c to 50c per ½ bu. basket.

Limas. 50 per cent. of crop, price very high, $1.50 to $2.00 per bu.

Potatoes. 75 per cent. of crop, price averaged $2.00 per bbl.

Our members from Essex county, favored as they are by their location, give the following cheery reports:

One writer says: This season has been especially favorable to the growth of vegetation generally in Essex county. The rains have been seasonable and abundant and the vegetable crop has been a large one. Sweet corn has brought prices that have gladdened the hearts of producers and done much to encourage them to continue in their calling; as it has brought from one to two dollars per hundred at times. Tomatoes, while for a time sold quite low, yet have averaged better returns than in some other seasons. While all crops suffered from lack of sunshine and an over abundance of rain for a few weeks in July and August, yet the general result here has been good crops of nearly all kinds of garden truck where the land was not too low and wet. Irrigation has not been so much needed here this season probably as drainage, and we have found that well drained land will withstand dry as well as wet weather much better than land that needs drainage, but has not had it.

Some of us who have failed to get good returns from chemicals

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on our sandy soils can endorse what Mr. Geo. W. Gould says about stable manure while we can but envy his position for getting it.

This season has been the most prosperous of any in my experience. In Essex County we do not have to send our produce to New York, the New Yorkers come out to us by the thousand to be fed, and we need all our fruit and vegetables to fill them. In choosing a location for our business of gardening, a man should (if he can) do as the country ministers when they pray, always face New York, that is the great centre. In our part of the State we have at Newark one of the greatest markets in the country. Every alternate night in summer, and day in winter, it is the place to see a crowd of sellers and buyers. During July 4,500 loads of produce were sold there; in August 4,407; in September 2,994, and in October 3,051—an average of about 340 loads. Often these loads bring one hundred dollars, and as far as we know the farmer carries every cent of it home in his pocket, having escaped the commission man, freight and package expenses. Besides that we can get all the stable manure we can haul for nothing, and for us nothing is half so good to make good crops. Successive applications of rotted stable manure seem to supply all the feed our crops need. We have found no profit in buying commercial fertilizers when we have the manure

Asparagus is being raised quite extensively in our part of the State. It is a rugged plant and will grow in fence corners or under a brush heap, but it can only do well set far enough apart in well-manured and well-tilled soil. Too much manure is out of the question, much depends on good plants to grow one's own from. The seed is the safest plan; sow the seed early in the spring in rows a foot apart, thin to about three inches when it comes up and give the same attention as any other close planted garden vegetable and you will have strong plants. When one year old set in rows not less than three feet apart. Our market demands green stalks and the Palmetto is the best kind.

Peas are the most popular of all the early vegetables we grow. We sell all we have right in Montclair. Nott's Excelsior is our staple kind, they are liable to rot if planted too early; they need a rich, warm soil and pay very well as a first crop.

Sweet corn is a staple crop though not as profitable as many others. We generally manure it heavily not only for that but the succeeding crop. Eight thousand ears is what we try to get from

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an acre. There is always a demand for it and for several years it has averaged over one dollar per hundred.

Lima beans have done well this year. Well-rotted stable manure mixed with the soil is all we ask for in the way of fertilizer. The rows should be five feet apart and not less than three feet in the row. We plant five beans at each pole, and if we can have one vine and trim that we are satisfied. They bear from August 1st until frost kills them.

Cabbage grows wild in western Europe, but with us it needs a good strong soil rather moist, not wet. It does not do well in hot summer weather. We plant it as a second crop after sweet corn or plow up our meadows and set plants as soon as other crops are off. The cabbage is one of the reliable steady sellers and is easy to raise.

Celery is one of our best crops. It is a second crop requiring little work after it is set until it is ready to trench. The seed is sown in rows as soon in the spring as the ground will permit. It takes a long time to come and we rake the ground to keep the weeds down and set in rows three feet wide and six inches in the row. Some times if it is dry weather we cover with meadow hay to protect from the sun. About the first week in November we dig a trench about one foot wide nearly the height of the celery and roots and five rows in each trench, and as the weather grows colder throw on dirt until it is covered, after that using stable manure to keep out the frost. We do not begin to sell until the last of December.

Spinach is a first rate fall or spring crop, only suitable as a cool weather vegetable. It is very easy to cultivate, but if you would succeed you must have a fine seed bed and rich soil. It will not come up if you do not, and it is a great deal more work to gather a load where the crop is small. Rampant growth is needed in order to have the best produce. Two hundred barrels per acre is an ordinary crop. It has done much better than that this year. One hoeing is enough. We sow in rows about one foot apart about the first of August and continue as we have the ground vacant until the middle of September. It will stand the winters of New Jersey, so part of the crop is sold in the spring.

Lettuce has done well this year, it has grown well and has brought good prices. A market gardener needs a variety of vegetables for the market as well as to keep his ground occupied. On my own farm we raise considerable fruit, as well as hay.

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Where adjoining land is selling by the foot all the strings need to be pulled.

New Jersey is the best State in the Union to raise market stuff in. When we see the wagons, or more often carts, without springs in the South with a mule and darkey driver going to market with from two to five dollars worth of produce we should rejoice we live in Jersey. A lazy man has no place in market gardening, but it is a fact that many farmers do lack energy, and as far as I have seen most farmers do not have a decent garden for their own use. The farm is the ideal place to bring up a family. It supplies work for all the members. Some agricultural education is too plainly practical to be ignored. There have been great advances in farming, but we are far below our possibilities. There is an increasing demand and the prospect is bright for a young man who has the perseverence and industry necessary to go to the farm and stay there. It may not be a rapid way to get rich, but it is more independent than being conductor on the trolley car as some farmers' sons are. In our place we held a fair this fall to which the farmers contributed their time and the whole community supported by their presence. We had an estimated attendance of six thousand for the two days and a permanent organization of grangers intend to hold it every year. It will surely inspire and uplift the agricultural interests in our county.

President Roberts: You have heard the report of the Vegetable Committee, what action will you take on it?

On motion the report was received and referred to the Executive Committee.

President Roberts: I will appoint, as the Auditing Committee to whom to refer the Treasurer's Report, the following gentlemen:

Mr. Lester Collins, of Moorestown, Burlington County; Mr. Justus W. Dobbins, of Verona, Essex County; and Mr. Arthur F. Randolph, of South Bound Brook, Somerset County.

As a Committee to take charge of our visiting delegates from other states, I will appoint Mr. H. E. Hale and Mr. W. H. Skillman.

I wish to remind you all that we come to these meetings not only to listen to the reports and to the discussions, but also to have the manufacturers bring here the articles they wish us to examine. They are all welcome and we will show them places where they may exhibit their articles which we will try to inspect between the sessions. The Field Force Pump Company have sent a representative here to

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this meeting, and he will show us their pumps, in the back of the room, during recess.

Mr. Skillman: Mr. President, before we adjourn, I suggest that we have the opportunity to elect the nominating committee. Heretofore the committee has been appointed by the chair, but under a resolution passed last year, it is to be elected in open meeting, and I would suggest it be elected before we adjourn for the recess.

President Roberts: How will that committee be constituted? By a representative from each county?

Mr. Skillman: I would suggest that it be elected in the open meeting. That is what the resolution said.

Mr. Hale: Can we not have the resolution of last year read, under which we are going to act?

President Roberts: It does not state any number. Shall it be simply five members?

Dr. Ward: Five would be enough.

President Roberts: We are ready for the nomination of names for members of that committee.

Dr. Ward: I would nominate Mr. Justus W. Dobbins from our section of the State.

Mr. Hale: I nominate Mr. Samuel B. Ketcham, of Pennington, as a member of the Committee.

Mr. Skillman: I suggest the name of Dr. Walter Van Fleet, of East Jersey, Little Silver, one of the editors of the Rural New Yorker.

Mr. John S. Collins: I nominate Mr. J. L. Lippincott of Riverton, Burlington County, as a member of that Committee.

Mr. Barton: I nominate Mr. Albert Repp, of Glassboro, Gloucester County, as a member of that committee.

These names were duly voted upon and elected.

President Roberts: Those five gentlemen will then constitute the Nominating Committee.

Mr. Hale: Before we adjourn, as a member of the Committee to take care of the representatives and delegates from other states, I would ask that they show themselves here at this corner, after the meeting, so that we will know them, and be able to take care of them.

President Roberts: I think they have heard the suggestion. Many of them you know personally I think. The Secretary has a list of them. Are there any further suggestions before we adjourn? We have no question box prepared but if you will lay your questions

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on the table we will take them up in their regular order. If there is no further business now, we will adjourn until 1.30 P. M.

FIRST DAY—AFTERNOON SESSION.

President Roberts: The first thing on the programme is Memorial Resolutions. Is Mr. Thomas J. Beans, the chairman of the Committee on that matter, ready to report?

Memorial Resolutions.

MR. THOMAS J. BEANS, Moorestown, N. J.

Mr. President, your committee were officially notified on Feb. 15th, 1906, that our Executive Committee had appointed them to prepare Resolutions on the death of Mr. John Repp and present those resolutions at the next annual meeting of the Society, January 3rd and 4th, 1907. In obedience to those instructions we respectfully submit the following:

Whereas, It has pleased our Heavenly Father to remove our much esteemed fellow member and friend from the stewardship, the activities and the discipline of this testing-period of our lives; and,

Whereas, Such is the impression made upon us during our associate work by his modesty, his unimpeachable integrity, his sterling sincerity, his faithfulness to all life obligations, his "we be brethren" spirit in all his inter-relations with his fellow members, that it is:

Resolved, That we place upon our minutes the record of the testimony given in this hour consecrated to his memory, of our high appreciation of his personal virtues, and of his helpfulness to the cause of Horticulture in our associate endeavor, and in his individual work.

In retrospect, during all the period of his business career in our State and in that of his participation in the functional work of our Society, there is revealed no quality more marked or more attractive than modesty; unassuming, unobtrusive as if he had heard some one say: "In honor prefering one another." Under its influence, the relative position that he would fain take in his various contact with

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business and social life in our State secured; his measurement of his merit, and perhaps some of us almost unconsciously so rated it. So it came that he was among us; that he was of us; yet it was not until his life was completed and "full-orbed" shone upon us, that we duly recognized his rank among us.

Another trait was sincerity, one of the very chiefest of human virtues. Sincerity, that indispensable element in loftiest manhood, was his by right of possession. We recognized it in all our intercourse with him, public or private.

Industry was a marked feature in his life. He consented to the never ending task given to man to subdue the earth. Obedience to the Divine enjoinment: "Six days shalt thou labor, on the seventh thou shalt rest: Six days shalt thou labor, on the seventh thou shalt rest," continuously repeated, was like the increasing pulse beats of a healthy human heart, vitalizing and vivifying the organism in all its parts and functions. There is a harmony between a life of obedient toil and all earthly environment, and happiness is a purposed consequence, just as the obedient flight of the great stars along their orbits is termed, "the Music of the Spheres."

His dignity was not the dignity that is assured and asserted, but the dignity that was a being, declared to be Creator-imaged, endowed with faculty of conception and initiative, conscious of purposed rectitude in transactions with his fellow-men, direct, explicit, without ulterior design, giving to all a fair exchange of equivalents, self-poised, self-reliant, resolute and forceful, there was little foothold for mendicant qualities. Many may not associate the toil of the working-man with personal dignity, but if there be challenge, we remember that not only the most courteous, kindly and sympathetic, but the most dignified one in human form that ever walked this earth, was a workingman—the Carpenter of Nazareth. We do not forget the efficient enterprise that won such eminent success. "A brief resume of his business career in our State would be earnest and constant, in spite of the pain of toil and shudder of grime, he urged his way through the vicissitudes of failure, of subordinate position and of proprietorship to ultimate success. But it is not the province of this report to mention the practical commercial results of his work; but only the personality of our friend and fellow member; associated and co-operative with us to faithfully try to further the purpose and great work of our society.

We all remember how faithful he was in all assigned duty on committees or in conventional work; superimposed as they were

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upon exacting and urgent home duties, and in the exercise of these how kindly and pleasant our personal relations always were. Like Gen. Grant he was essentially a poet rather than a talker. But for his own work—his arena was the field and his consultations were with the field, the plant and the market themselves, rather than with his fellow members. He recognized that individuality was the trade-mark of the great Creator's work, and he consulted the individualities of the crops he purposed to produce as his factors in the proposed exchange of equivalents with his fellow men. When creative energy bestowed the plant's endowment of faculties, that plant's subsequent relations to such a fellow creature as man was considered. Not only was man designed to cultivate the plant, but the plant was designed to cultivate the man. His powers of conception revealed to him that average crops of average quality, sold for average prices, had not been profitable. So the production of high priced qualities to be sold at high priced periods was the key to the position that must be won. His capacity for initiative pioneered him to the adaptations required for success, and energetic industry furnished the means. The success of the venture is much admired—and was so signal that it stands apart without a peer in the State, and it seems not so much the achievement of the "bold, significant, successful business man, as it does the result of intelligent comprehension of and loyal obedience to the Creator's laws, and of energetic industry." Shall we be honest and tell that he did not work alone; that all along his career there was One, observant and interested, and His words were: "Seest thou a man diligent in business, he shall not stand among mean men;" "he shall direct his affairs with discretion." When the Duchess of Wellington lay dying, the golden shield and the costly triumphs of artisan skill—the gifts of a grateful nation to the great Duke in view, she was heard to say: "All tributes to merit; there's the value; all pure." May we not so say of the success of our fellow member: "All tributes to merit; there's the value; all pure." Shall we add to our tribute that of those at his burial? At the last parting, by those who had daily social, business and religious relations with him, and had shared the various activities that revealed and illustrated the man; there seems of such a sense of real loss; such depth of respect and sincerity of affections; and when they with whom he had united in confessing their need of a Saviour and professing their acceptance of a Saviour brought their tribute, there seemed reverent gratitude by all, that there had

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been so realized in their midst the verity of the promise; of the life that now is and of that which is to come.

We recommend that official notice be given to his family of this tribute of respect and affection from his fellow members, and assurance of heartfelt sympathy for them in their bereavement, and now shall we not add to our tribute of sorrow, respect and affection, that of gratitude; that he has so taught us, that the right path through life is not a path sinuous and idly defined; but a path straight and open with Heaven's sunlight shining on it. As our words fail we hear:

"Mortals that would follow me,
Love virtue; she alone is free,
She can teach you how to climb
Higher than the sphery chime
Or; if virtue feeble were,
Heaven itself would stoop to her."

President Roberts then relinquished the chair to Mr. John S. Collins and took the floor.

President Roberts: I was also a member of that same committee. Mr. Beans took the spiritual side of Mr. Repp, and I have just a short article here on the practical side.

John Repp was born near Dayton, Ohio, February 26, 1836. The family are of German origin. He moved with his father's family in 1846 to Miami County, Ind., which was then an almost unbroken wilderness. He was put to work as soon as he was old enough, and had but little chance to acquire an education. He remained at and near his father's home, working at whatever he could find to do, until he was twenty-seven years old, when with a thousand dollars he came to Malaga, N. J., with the intention of carrying out the ambition of his life.

In his early days, living as he did, where fruit was largely his childish dreams, and so seldom his privilege to enjoy, he then began to plan in his boyish way that when he became a man he would make a special effort to grow fruit. This thought, born in his youth, lived throughout his entire life. He now thought he was at the beginning of the realization of his hopes. He put out an orchard of apple and peach trees, but everything he bought was so dear that before he could realize anything from his orchard

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JOHN REPP,

BORN FEBRUARY 26, 1863, DIED FEBRUARY 8. 1906.

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his debts became so great that he was forced to sell out, and found that he was without a dollar. He had been drafted during this time and paid the three hundred dollars commutation money. In the spring of 1865 he hired with Thomas Whitney as manager of about 1,200 acres of land, which position he filled for eight years to the satisfaction of his employer. Having never lost sight of his boyhood ambition to become a fruit farmer, in 1872 he bought entirely on credit of Mr. Whitney the farm which is at this time a monument of his zeal, ambition and wisdom, as a fruit farmer. It was then covered with stumps and brush, and only old buildings. He had saved money enough to buy the stock necessary to carry on a dairy farm, which he carried on successfully along with the growing of small fruits. At the same time, pressing upward to the mark of his early ambition to grow apples, peaches and pears. While his friends sought to advise him, and many times ridiculed him for what seemed to them a foolish venture, he was more than ever convinced that the soil of this part of New Jersey was adapted to the growing of fruit, and a farm of 200 acres covered with fruit trees and giving employment at times to 50 men, and from which has been sold $25,000 worth of fruit in a single year is the result of his effort. In 1903 he found that he had so far succeeded in his fruit farming, that it became necessary to make plans for storage, so with his three sons he organized the John Repp Ice and Cold Storage Company, with a capacity of 10,000 barrels, and was the president of this company at his death.

The work of Mr. Repp among his fellow men may be shown in the fact that he was a prominent member of the Grange, and for a long time was the only representative of Gloucester County at the Horticultural Society. He attended the first good roads convention held in the State and was very earnest in his plea for good roads for the farmer. He was for many years president of the Glassboro Building Loan, also president of the trustees of the M. E. Church, where he was a very conscientious member.

Mr. Repp traveled extensively through the fruit growing sections of the East, where he became well known among the most prominent fruit growers, and as a competitor the fruits spoke well of his labor at the World's Fair as well as at many of the local fairs. In November, 1905, he paid a visit to his old home in Ohio and Indiana, and while in the city of Cleveland, Ohio, he was struck with apoplexy. After an illness of three months, February 8, 1906, he took his departure to that land where the trees

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bear their fruit in season, and the leaves are for the healing of the nations.

RESOLUTIONS.

Whereas, It has pleased our Heavenly Father to remove from our midst our leader, our co-worker, our friend John Repp,

Resolved, That we feel that his quiet, modest manner, his simplicity, his honesty of purpose had endeared him to all that knew him. Although his advice was never intruded there was no fruit grower in this State whose opinion was more sought nor whose suggestions were more valued.

Resolved, That out of respect for his memory and on account of our great loss, and because of the good it will do us, and the new inspiration it will give every struggling fruit grower in this State, that we study for a few moments the life of this plain, earnest man whom adversity could not crush nor prosperity carry away, truly one of nature's noblemen.

Resolved, That a copy of these resolutions be forwarded to the bereaved family by our secretary, and a copy be printed in our annual report.

THOMAS J. BEANS,
HORACE ROBERTS,
JOHN S. COLLINS,
Committee.

Chairman Collins: You have heard read the just tributes to a departed brother, are there any further remarks? If not, what will you do with the resolutions?

On motion it was voted that the resolutions be accepted and copies forwarded to the family, as directed.

President Roberts: Are there any other memorial resolutions ready? Mr. Reid, have you prepared some resolutions on the death of Mr. Conover?

Mr. W. H. Reid: I am not chairman of the committee to prepare anything on the death of Mr. Conover, but I wish to say that Mr. Conover was a man who in our locality was well known and highly respected by all his friends and neighbors. He had the respect of the whole community there, which is saying about as much as one can say of a man. He was a man who lived a good, conscientious life. He was a prominent man in our church and one of its officers.

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President Roberts: That memorial will be presented to the secretary and incorporated in the minutes.

Mr. David Baird: The committee presents the following resolution: On the death of our friend Jacob B. Conover who departed this life January 20, 1906, we lose a friend and co-worker in horticulture. We cherish the Christian character of our departed brother and would endeavor to emulate his virtues.

President Roberts: The Special Fruit and Flower Committee did not report this morning, is that ready to report?

Report of the Special Fruit and Flower Committee.

DR. JOSEPH B. WARD, Chairman, Lyons Farms, N. J.

Mr. Elias S. Black reports:

On Mr. Charles Black's grounds and other growers' grounds in the eastern part of Mercer County I saw growing in large patches the new strawberry called Mount's Seedling. This variety originated in that section with Mr. Samuel Mount and is one of the finest early varieties now grown in that section, rivaling that superb early berry "Success," and ripening about the same time, and about the same size. It is a deeper red color, and of finer texture than the Success, and equally as productive. Never before has Success had such a rival for a second early berry, and I believe it to be a valuable new variety.

In the eastern part, or shore district of Monmouth County the William Belt seems to be a leader on the grounds of Mr. Timothy White, who claims to have a "pedigree," or superior strain of this valuable old variety, and certainly it is a great berry. When crated and ready for market they were the most attractive berries I saw during the past season. Mr. White is a very intelligent, careful and progressive grower, and William Belt likes that kind of a partner to do business with. The much-praised New Home failed to respond to Mr. White's care, as it did for all the other growers that had it. The foliage is of a yellow color, very soft and small. On Mr. Lovett's grounds the Commonwealth and Stephens were fine, and Rear Guard, under good culture, would have been a splendid berry. Mark and Mrs. Hannah Howell, and Almo were all inferior to many of the older varieties.

Thompson, No. 2, was an early variety, but Success a much better berry.

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I also saw the Kennoyer Blackberry growing alongside of Ward on Mr. Lovett's grounds. Kennoyer is much earlier than Ward, ripening about with the Early Harvest, and if it would do as well elsewhere as it did for Mr. Lovett, it would be a valuable early market blackberry. It is not large, but it looks and tastes like a blackberry, which Early Harvest does not. The plant is a good grower, and a good cropper. The Ward is the very best blackberry of its season, doing better this past season than ever before. It needs good soil and good culture, and then will give good profits to the grower.

I would also like to say a good word for the President as fruited upon my grounds, and one of my neighbor's last season. The fruit was firm, large, and of splendid color, while some of my best varieties failed me, probably caused by excessive moisture, which was disastrous to strawberry growing in Essex County.

President Roberts: You have heard the report of Dr. Ward, what action will you take on it?

On motion it was voted that the report be accepted and referred to the Executive Committee.

President Roberts: The matter is open for discussion at this time.

Dr. Ward: I would just like to say one word in regard to this report of Mr. Elias Black, in relation to this berry, the William Belt. I do not believe in pedigree plants. A strawberry, to succeed, has to have its own home. What will succeed on your ground may not succeed on mine if I am two or three miles distant, or, may be across the street. There is something very peculiar about the feeding qualities of strawberries. As far as the pedigree is concerned, I believe that is all in the soil. It is the food that the berry requires, which assimilates itself to the berry. Get the strong rampant grower which will give you the strong fruit buds, and, without strong fruit buds, it is impossible to get fruit. I believe that is the theory of the pedigree berry. I believe there are too many of us who in propogating the strawberry rely upon old exhausted plants for our new stock. In planting that stock you certainly will not succeed. You must have the runners coming from new, vigorous, strong plants and the new plant strong and firm to be put in the ground, and in two days it has taken hold and off it goes. That is the kind of pedigree plant I want, and that is the kind I am trying to propogate on my grounds.

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I think that is all there is in a pedigree plant. The William Belt is a grand, good berry. I have gone back to it. I have tried a great many varieties of berries, but after all I got out of it some years ago. The last year I got hold of it again, and I am growing it now stronger than ever. With me it does right well, one of the best and I tell you, there is a good deal yet in the William Belt. It has its place, but, as I said, on the grounds of a great many persons, it will not do at all, and there it may be that it will not make full growth.

Mr. G. W. Gould: Have you tried the President?

Dr. Ward: Yes sir, I have tried the President. I spoke of it in my report. I think more of the President, since the last year, than I ever have; with our peculiar season, very dry up to the early ripening of the berries and then running right into a succession of wet weather all through, of all the berries that I had on my place last year, the President did the best; it stood up firmer, when the fruit was ready to go into market; it was bad enough, but by comparison it was in fairly good shape. The fruit was large and of fine color, so that I have a pretty good opinion of the President as one to plant out heavy.

President Roberts: The President has been well spoken of in many places.

Dr. Ward: It is just as I have said. You must have a home for your plant. What will do well on your soil, if I put it on my soil, may not do well at all. The only way to do is to get a few plants and try them, and see what it is going to do with you, and then you can go ahead.

Mr. DeCou: I should like to ask Dr. Ward if this Mount's Seedling is any better than the Success strawberry?

Dr. Ward: I do not know anything about it. This is only Mr. Black's report that I am giving you. Mr. Charles Black, perhaps, can answer that question.

Mr. Charles Black: I know all about Mount's Seedling. I have more of it in fruit than anyone else. A friend of mine at Hightstown originated it and took out a seedling out of the fence corner and planted it some eight or ten years ago. About five or six years ago he had no more than an eighth of an acre, I think, grown thickly all over the ground, and at one picking, before anybody had commenced to pick them at all, he had picked eight crates of fine berries. So he gave me a few plants, and I have been growing them and increasing the plantation of them. Last year we had about an acre and a half in fruit. They were plants that were set along in July

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and August, and then fruited the next year. It is an excellent grower, and a finer colored and finer flavored berry than the Success. I do think it is not as productive as the Success, but, as a home berry, or for the local market, I have never met an early berry that I like as well as that. I have not sent it out, nor recommended it very highly, because I was not certain that it would be productive enough. Any practical fruit grower who would like to try it and give it a fair trial, I will be perfectly willing to let him have a few plants. I have now two acres on good sandy soil which will fruit next year.

Mr. DeCou: Is it firm?

Mr. Charles Black: No, not very firm, not quite as firm as Success. It is too soft for distant shipping. It holds its own as to size to the very last, and is about as early or a little earlier than Success.

Mr. DeCou: Is it staminate or perfect?

Mr. Charles Black: It is perfect.

President Roberts: Is the Legislative Committee ready to report?

Dr. Ward: Mr. President, I will ask the indulgence of the Society for the Legislative Committee; the report is not ready. But, sometime during the session, I will present a report for that Committee.

President Roberts: Has Dr. Smith anything to report?

Dr. Smith: Mr. President and gentlemen, just one brief announcement that I wish to make to the members of the Horticultural Society. Among the insecticides that have been prepared for the fruit grower this year is a preparation of lime and sulphur that is known as the Rex Lime and Sulphur Mixture. It is a concentrated mixture of lime and sulphur, and it is to be reduced with twelve parts of water. It comes from Omaha, Nebraska. It has been tested at a slight expense here in the East, and the result, so far as the reports now show, have been very good. It has been equal to, and, in some cases, even a little better than the home made mixture. I ordered some of it for use in the State of New Jersey, and got in eight barrels of it all told. The barrels hold rather more than fifty gallons each and it cost me eight dollars a barrel for the mixture, and four dollars a barrel for the freight, so you can figure out the cost of it yourselves, and it will reduce by twelve parts of water, so that you get about six hundred gallons out of a barrel. I have three barrels of that mixture that I want used by practical horticulturists in the State under ordinary orchard conditions, making only the condition that they will use the mixture carefully and thoroughly and report upon the result. I want three fruit growers who can use

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each an entire barrel, and I would like to make arrangements for the distribution of that material in that way. There is a chance that we have here something that will do away with the necessity of boiling the lime and sulphur that will be just as effective, and it will cost very little, if any more than the home-made mixture. That is the announcement that I have to make, and I also suggest that if there are any insect questions that are to be asked, I would like to have an opportunity to answer them all at one time and while I am here with you.

Mr. Charles Black: Is not that the same mixture as Consol?

Dr. Smith: No, that was a different combination, and it was not nearly so concentrated a mixture as the present one is.

Mr. Charles Black: Was it a mixture intended for the same use as the lime and sulphur?

Dr. Smith: Yes, it was intended for that. This has been actually tested on the Pacific Coast, and they have found it there to be as effective as the home-made mixture. It has been tested to a small degree in the Eastern states, but not in New Jersey, so far as I am aware, and I want to have it tested in New Jersey under ordinary orchard conditions, and therefore I make this offer at the present time.

Mr. Charles Black: Do you think it has any advantage over the soluble oil ?

Dr. Smith: There are a great many people who like the lime and sulphur better than they do the soluble oil. Personally I do think it has no advantage over the soluble oil; at the same time, we want to give every mixture that is put on the market a fair trial. And the lime and sulphur mixture has an advantage over the soluble oils for use on peach trees, in that it exercises a certain influence upon the diseases of the peach, and, in that respect, on peach orchards, the lime and sulphur will be preferable to the soluble oils.

Mr. Charles Black: Do you think this has the same effect that the oil mixture has?

Dr. Smith: Yes, sir, I do. I do not see any reason why it should not have. I was at a meeting of the Horticulturists of New York held last week, and several of them had had practical experience with it, and they spoke well of it. But it does not follow that the experience would be as good here as a natural result; but, it is worth while trying, and I want to have it tried, if possible, by the members of this Association.

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A Member: Is it a preparation that will lose strength by standing, or is it a staple product?

Dr. Smith: It is a staple product.

A Member: Will it keep?

Dr. Smith: Yes, sir.

Mr. J. C. Hendrickson: Will it remain on the trees as long as the lime and sulphur and salt?

Dr. Smith: That I do not know. It does in the west, but it has been tried there, so far as I know, probably, where it is dryer than it is here, and, as to its sticking qualities, I do not know how it compares with the home-made mixture. It has no excess of lime. There is just enough lime in it to dissolve the sulphur; it is just a combination of lime and sulphur, with enough lime to dissolve the sulphur and no more.

Mr. Charles Black: Have you made any application of it to trees?

Dr. Smith: I have not.

Mr. Charles Black: You do not know whether it forms a coat?

Dr. Smith: I know it does from reports, not from personal experience. It came too late for the fall applications. We intended to make some ourselves, but we did not get it in time.

President Roberts: My experience is that it is quite as good in those respects as the old solution, and simpler.

Dr. Smith: I should have said that two barrels of it have already been sent out, and Mr. Roberts had one barrel.

Mr. Mount: I would like to ask whether it is an article which is for sale anywhere, so that we can use it on a small scale. If we want to use it in a small way will we have an opportunity of buying it and using it?

Dr. Smith: It is nowhere on sale in the State at the present time. It is manufactured at Omaha, Nebraska, by the Rex Stock Food Company, and, so far as I know, they have no Eastern agency, and there is no opportunity of buying it in small quantities. Of course, if it works well, we will see that it does come into the State, and that there is a station for its sale established.

Mr. J. E. Holden: I wish to ask how late in the spring it would be safe to spray, that is, after the buds are completely developed?

Dr. Smith: I think any of these mixtures will be safe up to the time that the buds either leaf or the blosoms are actually opening. So long as the leaflets or the petals have not actually opened, it will be safe to make the application; but the longer you delay the

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more chance there is of danger of damage; and you know that the opening of the buds is rather uneven, particularly on some varieties of trees, and you may do some injury to a few advanced buds, while the bulk of the tree shows that there is no injury.

Mr. W. H. Reid: I would like to ask Dr. Smith in regard to spraying with Bordeaux mixture producing a russet skin on apples. This is a matter I brought up here before, and I failed to get anyone with practical experience to give me an answer. Our experience has been in using bluestone and Bordeaux mixture we have almost invariably rusted certain varieties of apples. I notice particularly on the Nyack Pippin that bluestone seems to place a russet skin on them. The same thing is true with the Ben Davis. I am one of those farmers, when I have a failure, I am willing to admit it, and I am afraid all our members are not willing to do that, but I think we can profit by our faults as well as we can by our successes. If others have had that experience, I would like to know it. I will say frankly that I shall not use bluestone this year unless I can have some guarantee that I can do it without rusting the apples. I find that it will rust certain varieties, and I shall use only Paris green for my trees this year, unless I can have some formula by which I know I can be safe in using the bluestone.

Dr. Smith: I will ask Mr. Craig if he can answer that question. I confess I cannot.

Mr. Reid: I would like to ask if any of our members have had that experience. Have you sprayed Bordeaux mixture and rusted the outside of the apples, so that it made them grow rusty?

Mr. Gould: I have seen it when one side was brown, but some of us have not thought that it was any disadvantage to them. It increased their keeping qualities.

President Roberts: Perhaps we can get an explanation of that to-morrow in our talk on Apple Growing. Supopse we pass that now and take up the "Higher Education in Horticulture," by Prof. Craig.

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Higher Education in Horticulture.

JOHN CRAIG, Professor of Horticulture, Cornell University, Ithaca, N. Y.

Mr. President, Ladies and Gentlemen of the Horticultural Society:

I am pleased to be with you on more than one account. I am pleased to meet the fruit growers of this interesting State. I am particularly gratified to know that their interests are wider than the mere growing of fruit, because, when we deal with a subject like higher education in horticulture, we are not dealing with fruit directly, but we are dealing with the men who grow the fruit, and the making of men is always, and shall always be, greater than the making of things. The subject which you have asked me to speak upon I cannot treat in a manner which will be as directly interesting to the majority of you, possibly as the growing of fine fruits, as the dealing with the insect and fungous enemies which attack them, because these things touch our pockets, and a thing that touches our pockets, gets very close to us. But, as I said before, I am exceedingly pleased to know that your interests are wider than the financial side. You remember the story of the two small boys, who were fishing once, and one of them got dizzy as he sat on the bank of the stream and fell into the water, and would have drowned, had it not been for the other one who jumped in and at a great deal of personal risk, pulled him out. As he was completing that heroic deed, a passer-by came along and witnessed it, and the passer-by spoke to the rescuer, and said, "My good boy, that was a brave deed you have just accomplished. Was that your brother?" And the little boy said, "No, that ain't my brother." "Well, he must be some very particular friend of yours." "No, he ain't a friend." "Well, how did it come that you risked your life to save him?" "Why," he said, "That boy, he had the bait in his pocket." (Laughter).

And we fruit growers look to the bait side, naturally pretty closely, and are obliged to watch that side; but, after all, I think we should watch this other side, this higher side, this side which stands for the making of the men who grow the fruit, as well as the fruit itself.

It is a very trite saying, and one often applied to us horticulturists and farmers, that the first man was the first farmer.

The first man was the first farmer: so Emerson tells us. Equal-

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ly true, I think, is it that the first farmer was the first gardener. Gardening, the old world term for horticulture, and farming as an art, were contemporaneous. We should never forget that agriculture on the scientific side owes a great deal to the gardener's art. Our oldest horticultural records are the vehicles by which agricultural lore, tradition, and practice have been transmitted. The writings of Virgil and Pliny are replete with reference and advice regarding the gardener's art, but sparse in agricultural detail. In the Dark Ages we owe to the monks with their garden loving instincts a debt of gratitude for preserving and carrying down the traditions, the literature, and the art of fruit and flower culture. These monastic and domestic horticulturists with their botanic gardens represented the first attempts at teaching garden craft that the world has record of. This more or less clearly defined movement began about the middle of the sixteenth century, and marked the establishment of that institution which in later years did become and now is a great factor in disseminating horticultural and botanical knowledge, namely the botanic garden.

THE AGE OF TRADITION.

The theories underlying the gardening practice of those days were hazy, mystical, and illogical. Much that was sound was clouded with a veil of tradition, fancy and fact. We have but to examine some of the teachings and more specifically some of the sayings associated with garden craft of the period to have this thought deeply impressed upon us. Says one sage of the 17th century:

Sow peas and beans in the wane of the moon,
Who soweth them sooner, he soweth too soon,
That they with the plant may rest and rise
And flourish with bearing, most plentiful-wise.

When the sloe tree is as white as a sheet
Sow your barley whether it be dry or wet.

When the oak puts on his gosling grey
'Tis time to sow barley night or day.

Sow peas and beans on David and Chad
Be the weather good or bad.

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Here's an example of a belief which persists to the present day:

"Cut a hazel wand forked at the upper end like a Y. Peel off the rind, and dry it in a moderate heat, then steep it in the juice of wake-robin or night shade, and cut the single lower end sharp; and where you suppose any rich mine or hidden treasure is near, place a piece of the same metal you conceive is hid, or in the earth, to the top of one of the forks by a hair, and do the like to the other end; pitch the sharp single end lightly to the ground at the going down of the sun, the moon being in the increase, and in the morning at sunrise, by a natural sympathy, you will find the metal inclining, as it were pointing, to the place where the other is hid."

But as time went on, as botanic science along systematic and physiological lines developed, the atmosphere was clarified, the spurious was winnowed out; that which was sound was selected and retained.

HORTICULTURE AND AGRICULTURE IN EUROPE.

While horticulture is by far the older art, the pedagogics of the subject do not antedate those of the sister field, agriculture. The germ of horticultural teaching has been included in the curriculi of agricultural schools from the beginning. In European countries agricultural and horticultural schools of one type or another were established fully one hundred years ago, and we find them advocated by agricultural writers many years previous to that period. It is not surprising, therefore, that considerable attention should be given to the teaching of agriculture and horticulture in European countries, for about seventy-five per cent. of the population depends directly upon farming for their livelihood. Then again the area of cultivable land is growing more and more restricted, and this means that greater attention shall be given to the management of that which remains. We shall reach that condition, and are reaching it in some parts of our New England areas at the present time. There are very few foreign nations without agricultural institutions of one kind or another at the present time. Some of these European countries have several hundreds of schools, devoting greater or less time to the teaching of subjects bearing upon agriculture and horticulture.

The case of Denmark has often been cited to illustrate the influence of these schools upon industrial prosperity. At the head of the educational system of the kingdom is the royal university of

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Copenhagen. Associated with this is the royal agricultural and veterinary college. This institution was founded in 1773, first as a veterinary school to which was added in 1856 a course of instruction in agriculture. Allied to this school there are twenty-one agricultural and horticultural schools in this small country, exactly the size of Maryland and Connecticut combined, or about half the size of the State of Maine. These schools have an attendance of about 4,000 students. Another important line of work in which Denmark has taken a noted stand is in the establishment of high schools in which instruction in agriculture and horticulture are given. There are seventy-eight of these so-called people's high schools. These originated in 1844, and the attendance at these schools now numbers about 6,000 students. What has been the influence of this system of agricultural teaching? Simply this, that in the last thirty years Denmark has risen from almost the lowest to the highest place in agricultural status among the countries of Europe. Her butter has a world-wide reputation; her bacon and eggs top the European market whenever they appear; her contributions to the people of this country are among the best we receive, and as farmers and citizens, the Dane is regarded as a distinct acquisition. Why should not the U. S. occupy the same position in regard to fruits and vegetables that Denmark holds with her dairy products?

THE BEGINNING IN THIS COUNTRY.

It appears that the first attempt at teaching agriculture in this country was made in Maine in 1821, When Mr. Robert Hallowell Gardiner petitioned the Maine legislature for a grant of $1,000 to aid in establishing an institution to give mechanics and farmers such a scientific education as would enable them to become skilled in their profession. The grant was secured and the Gardiner Lyceum incorporated the same year. It was formally opened for pupils January 1, 1823, with the Rev. Benjamin Hale, of Newbury, Mass., the president. The course of study covered two years. There were twenty students the first year. It continued to grow for several years, and at one time the students attending numbered fifty-three. However, the movement seemed to be too advanced for the times; the state withdrew its aid, and the property was sold to the city of Gardiner in 1857.

While sporadic efforts of the kind just chronicled were made from time to time in various states, noticeably New York, Connecticut and

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Maryland, the real fundamental development of agricultural education occurred on the passage of the Federal Land Grant Act in 1868, which provided for the establishment of an agricultural college in each state of the Union. This was practically the beginning of the pedagogics of agriculture and horticulture. The whole method of teaching a subject, which by many was thought to be unteachable, had to be worked out. The entire scheme was unsketched. There was hardly a landmark, much less a blazed path.

From a beginning with one, two, or three persons representing agriculture and its parts in each college, how impressive the development which has occurred, and which is represented by the modern college of agriculture of to-day! In the institutions teaching or investigating horticulture in the United States there are at the present time one hundred persons employed in this branch alone—more persons than were employed in all branches at first. These men divide their time between educational and investigational duties. As a rule the head of the department devotes most of his time to educational work, and directs the activities of both features, that is the pedagogic and the research divisions. There are over 4,000 students receiving instruction in horticulture in these colleges of agriculture.

It now becomes us to examine that branch of teaching and research known as horticulture, with a view of ascertaining its component parts.

DISTINCTIONS BETWEEN HORTICULTURE AND AGRONOMY.

The pedagogics of agriculture have developed in a striking manner in the past twenty-five years. The whole subject has been separated and classified into its logical divisions. In the early days one man occupying the chair of agriculture attempted to cover the whole field. Now the field has been broken up into its natural divisions. But after all, the distinctions between certain parts of horticulture and agronomy, field crops is not strikingly clear. The lines between the two are arbitrary rather than natural. Horticulture derives its name from the scope of the operation rather than from any real difference in the crop or method of production. Whether the sweet potato or the Irish potato, or coffee, or tea, or cocoa, or ginseng should be considered horticultural or agronomical products cannot be settled on any logical basis. Horticulture as a whole, then, is an arbitrary and convenient division of the kingdom of economic plants,

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which has developed partly in response to method of cultivation, but more largely to the personal leanings of the individual. It is true that we like to regard horticulture as the more refined operation of the two, that is refined in reference to the difficulties of procedure. More intricacy on the art side and greater aesthetic qualities are associated with it than with agriculture.

As in the case of agriculture, so with horticulture, less than a generation ago men in this field were asked to cover other branches, which have since been segregated, and we had professors of horticulture and forestry, of horticulture and landscape gardening, of horticulture, landscape gardening and forestry, and a few even more comprehensive titles than these. These conditions marked the beginnings of teaching practice in this country, and the marvel is that the evolution took place so rapidly. Forestry in most states, regretably in not as many as we would like, has become a great branch by itself, co-ordinate with horticulture and agronomy, to both of which it is somewhat intimately connected. Landscape gardening, landscape architecture, landscape art, rural art, outdoor art, or ornamental gardening, as it is variously designated, has also been segregated, but it must always be closely related to and associated with horticulture through the plant material side. It should be stated that the entrance requirements in the best colleges of agriculture are now on a par with those of the colleges of arts and sciences.

CHIEF DIVISIONS OF HORTICULTURE.

Eliminating forestry on one side and ornamental gardening on the other, we have remaining as legitimately belonging in the field of the horticulturist:

1. Pomology, being the study of fruits and their culture.
2. Olericulture, being the culture and study of vegetables.
3. Floriculture, the culture of flowers.
4. The manufacture of fruit products.

1. THE LECTURE ROOM.

The instruction and investigation in the first three branches cited may be co-ordinated very naturally, while the last stands somewhat by itself. In this group should be found the preservation of fruit products by evaporating processes, by canning and special methods; the extraction and preservation of fruit juices will also come under

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manufactures. An important division of this branch should be devoted to a study of ferments in their relation to the manufacture of wine and cider.

POMOLOGY.

Pomology is said to be synonymous with fruit growing. In the common usage and acceptance of the term, it is; but in pedagogics it should mean much more. Fruit growing studies ways and means of promoting fruit culture, but it does not suggest the necessity of a monograph on Japanese plums or Chinese peaches. Geology is the study of the earth's crust. A course in soils, however, deals with the same thing, but in quite a different way. Pomology is to fruit growing what geology is to soils. Pedagogically pomology is the better term. It has grown to occupy a very important place in the horticulture of the country because new regions are opening, old fruits are finding new adaptations, and more than all, because of the rapidly extending markets and the superior facilities for storing fruits and subsequently transporting them.

To the student of horticulture pomology divides itself into two parts: (1) practical pomology; (2) systematic pomology. The first deals with the management of fruit plantations and the handling of fruit. It is difficult to treat this subject without taking the geographical factor into important consideration. For instance, the great citrous and sub-tropical fruit interests of the United States are developing quite out of proportion to the land area they occupy.

Systematic pomology is quite as fascinating to the student as systematic botany, because it studies relationships and characteristics of varieties of fruits. It has a deeper value than the mere discipline derived from the study because characteristics of fruits and of groups of fruits are intimately associated with adaptations, and these broad distinctions often form important suggestions to the planters in different parts of the country.

FLORICULTURE.

This is now a highly specialized branch of horticulture. It is too closely identified with the germ of horticultural thought to be segregated and placed in a category by itself. A large number of persons are interested in one or another phase of floriculture than in any other branch of horticulture. The commercial interests are however not as great as in pomology or perhaps vegetable growing.

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There are two well defined parts to floriculture. The first is the architectural, taking up the construction of houses and involving certain phases of mechanics. Thus far horticulturists have been very willing to follow the lead of greenhouse builders and to accept their dictum in the matter of general principles, and to some extent details. There are few more important courses in horticulture, indeed in our colleges of agriculture than that bearing upon the construction and management of greenhouses. If there is a first class course in this branch given in any institution, I should like to have the privilege of indulging myself as a student for a term or as long as it lasted. The student in this course should have as a prerequisite a good training in mechanical drawing. The range of work is wide, going from drawing on one side to the spreading of putty on the other. In the growing side or department, a florist is need, one who is a craftsman as well as a teacher. The instruction should contain a minimum of lectures and a maximum of practice.

OLERICULTURE.

I have heard objections to this name on the score of awkwardness and ambiguity. I have no fault to find with it myself, for we have accepted agronomy, we are getting on speaking terms with zootechny, and are even found coquetting with thremmatology. Then why should we balk at olericulture? It is smooth, though not oleaginous, and is sufficiently descriptive; why not accept it? Apart from the term, the subject is not a particularly easy one to teach. As a recitation course of the old type, it is usually not a brilliant success. As a lecture course it has some possibilities. But whether lecture or recitation or something of both, it should be supplemented with laboratory work and garden practice. Many of the root crops may be carried over for study, and made the object of systematic examination, though the work is given in the second semester. This laboratory work should be corollated with bibliographical exercise in past as well as contemporaneous literature. Finally no student should complete the course without having made the plan of a garden or in seed planted, and cared for its crop during the spring period. As far as possible the class room instruction should be supplemented by excursions to nearby truck growing and vegetable growing centers, where the commercial methods may be of first hand.

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SUPPLEMENTARY STUDIES.

Aside from the fields which have been mentioned and which form the frame work of a department of horticulture, there are certain subsidiary branches which must be provided for.

1. Plant breeding. The field of the plant breeder is found in every phase of agriculture and horticulture. At the present time no subject is of greater importance in the horticultural world. In a few institutions a course on plant breeding is given. In no institution with which I am acquainted are there adequate laboratory facilities. While principles are important and should be carefully studied, nothing will develop in the student an active interest in this great work more quickly and more impressively than the actual doing or performing of the operation itself. The modern college of horticulture should have its plant breeding laboratory, a house set apart in which plants are introduced and grown for the specific purpose of allowing breeding work being carried on during the winter months. The laboratory work should afterward be supplemented by actual experience in the field.

LITERATURE.

The teacher and investigator should give a good deal of time to a study of the literature of horticulture, and this is so closely associated with landscape gardening that one can hardly be taken up without a consideration of the other. A study of the literature gives background and perspective. It also provides a philosophic flavor and seasons the entire work with wholesome sentiment. We should be taken away from the practical, the money-getting, the knowledge-acquiring point of view occasionally. A view of the literature of any subject will do much to correct our views and give us a sane outlook, which may perhaps be tinged thereby with a feeling of reverance for men of the past who worked hard and made progress amid difficulties and tribulations much greater than those which beset the student of the twentieth century.

2. LABORATORY AND FIELD EQUIPMENT.

(1) Pomology. The teacher of practical and systematic pomology needs in addition to his sound training in plant physiology and the fundamental sciences, a broad and personal acquaintance with the same fruits under varying conditions of soil, climate, and

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elevation. This experience which can only be gained by travel is of the utmost importance. Nothing in my opinion is so dangerous and I might say pernicious, as the opinions and information gained though by first hand experience, in circumscribed local surroundings. Do we not need travelling fellowships in horticulture as well as travelling fellowships in history and archaeology? In order to teach pomology the department should have its field laboratory and this must be regarded as a laboratory and not as a show or model orchard. One of the most difficult things the teacher has to deal with is the misconception on the part of the layman of what a college orchard stands for. It is not an illustration orchard. It is not an experimental orchard. It is a laboratory in which the student may study the forms which belong to his field. There should be an abundance of trees and plant material representing all stages of growth.

The systematic side of the subject takes up the taxonomy of fruits, deals with descriptive pomology, and the problems of nomenclature. It is desirable that the student should become acquainted with not only typical varieties of fruits, but varieties of fruits grown in different parts of the country. It should also be stated that this work in practical and systematic pomology should be preceded by an elementary course in the propagation of plants.

It will be observed that we are not dealing with the experimental side nor are we considering the mere looks of things. The scheme conserves educational interests, and should be completely seprated from the province of the experiment station. One develops the teaching side, the other that of research. As an accompaniment of the work of the field laboratory in the college, excursions should be made to fruit farms and orchards within convenient travelling distance. Plantations visited should be typical of their kind, and as far as possible should illustrate special principles or systems of management.

In teaching systematic pomology it goes without saying that while the fruit is the main end of the course the study should begin with the tree itself. Its botanical characteristics should be studied and corollated with the systematic and morphological studies of the fruit, which take place later on in the conventional laboratory.

In order to provide fruit for the seasons, cold storage is called into requisition, and this will enable the teacher to furnish even stone fruits in the early part of the season, and to hold most of the

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early varieties of pomes, apples and pears till they can be studied by the class. Other types of perishable fruits may be preserved in liquids. The citrous fruits are in season in mid-winter, and can be studied at any time that they can be procured conveniently. The old method of studying these fruits was by the use of casts, but no imitation or fac-simile is equal to the real thing, and the farther removed the student is from the plate book and the wax model, and the nearer the actual object, the better. Our teaching of pomology and kindred topics must ever be wider than our own conditions.

FLORICULTURE.

The laboratory requiremnts for the proper pursuance of this department call for greenhouses adapted to the forcing of the leading commercial crops. In these the student should actually manage and study the plants he is dealing with. Certain houses are assigned to groups of students in turn, and each one is put through a drill in the management of the houses and the crop. Corollated with this is the lecture and recitation side. The observing faculties of the student are stimulated by reports being called for at stated intervals. These reports should cover every detail of management, and will give the student status as an accurate observer.

The other side of this field bears upon the construction of greenhouses, and to this end there should be material supplied for the erection of buildings for different purposes. These buildings may be of the knock-down order, and can be erected and dismantled at will. Not only is the actual work of construction studied, but this should be preceded and followed by the execution of plans with complete specifications. The same details should be followed out in the heating of the plant. This work demands as a prerequisite good training in mechanical drawing.

OLERICULTURE.

As either a lecture or a recitation course olericulture is not likely to prove a shining success. It should be accompanied by a definite laboratory course in which the actual materials of the garden may be studied at first hand. Many of the root crops may be carried over for study; notwithstanding the fact that the work may be given in the second semester these root crops can be made the subject of careful systematic study. Of course this should be corollated with bibliographical exercises in the literature of the subject,

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both past and contemporaneous. The field garden is a part of the laboratory used in this course. No student should be permitted to complete the course without having made a plan of a garden, ordered the required seed, planted and cared for his crop during the spring period. A statement of this work together with the planting scheme and complete specifications supplemented by notes on the growing crops should form a marking basis for his instructor.

MANUFACTURING.

In the manufacturing side very little has been done in any of the colleges, except in states where certain industries have become highly specialized, as for instance in California where grape growing is of primary importance, and in the northwest Pacific, where some of the deciduous fruits used for drying are staples. In most of our eastern institutions a department of manufactures for the utilization of by-products and otherwise waste products of the orchard should be provided. The manufacture of fruit juices and jellies should have a distinct place in our horticultural courses; but these could not be attempted until facilities for practical instruction are provided. Lectures might do some good, but it would be like chemistry with a note-book and no laboratory.

POST GRADUATE WORK IN HORTICULTURE.

The outlines and discussions which I have thus far presented bear upon undergraduate courses. It is a gratifying fact to find that our leading universities with affiliated colleges of agriculture now offer students in horticulture and allied branches the same privileges and the same degrees in the post-graduate department which are accorded to students of the natural sciences, the concrete sciences, or the classics. In Cornell University the same preparatory requirements are demanded of the student who enters the College of Agriculture as those required of the would-be student in Arts and Sciences. In a like manner the man who wishes to supplement his undergraduate experience with post-graduate training is admitted on the same basis and given the same opportunities and the same degree rewards which are offered in other fields. A student may now secure his Doctor of Philosophy degree in Cornell University by investigating a special topic in horticulture, whether it be in the field of floriculture, olericulture, or pom-

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ology. This is a significant admission on the part of academic authorities, and points to the acceptance of these subjects as being of equal pedagogic value and equal research value to the investigator as any other subject which he may take up. The whole theory of education has been very considerably modified in recent years. While I am not of the opinion that really technical subjects like horticulture and agriculture should have a place as such in secondary or elementary schools, yet the nature study phases of some of the natural sciences should be used to give the pupil an opportunity of expressing his natural bent, and at the same time can be used as training subjects for the development of the analytical, the observational, and the deductive qualities of the pupil as satisfactorily as the conventional subjects ordinarily provided. It seems to me that a good many of our educators in advocating unqualifiedly the admission of agriculture into the common schools overlook some important points. They overlook the fact that agriculture is essentially a technical branch, and should follow a course of training which equips a pupil to engage in research. On the other hand, the directing of the attention to natural phenomena, to the habits of the occupants of field and wood, and their relation to the industries of the farmer, is conducive in the highest degree towards a sympathetic association with phases of outdoor life that are likely to lead the pupil into a serious consideration of some rural occupation.

DEMAND FOR TRAINED HORTICULTURISTS.

It seems perfectly fair to say and the statement is justified by the condition of the present day labor market, that there never was a time when the world showed greater appreciation for the trained worker; there never was a time when the market was more active and the supply smaller, and this in the face of the fact that our agricultural colleges are annually training some thousands of workers.

There are three types of men in demand: (1) the teacher, (2) the investigator, (3) the manager. Horticultural schools of high as well as low grades are being organized each year. The demand for teachers is constantly in advance of the supply. On the passage of the Hatch Act, in 1887, a great impetus was given to research work in agriculture and horticulture, and a consequent demand upon trained workers was levied. The recent passage of

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the Adams Bill, which materially increases the appropriation for research work, creates many new openings, and enlarges investigational opportunity. The difficulty at the present time is that our men are called into the field before they are properly equipped for their life's work. Again in the world of affairs we find that capital is looking upon land investments and land development with more and more favor. The American people as a class purchase more of the luxuries of life than any other nation in the world. The market for high class fruit products is constantly increasing. The demand for business men, for skilled labor in the production of these articles of diet, is also increasing. Men with scientific knowledge, with practical experience and with business methods and analytic minds are needed to manage large fruit growing establishments.

GENERAL EDUCATIONAL EQUIPMENT FOR THE HORTICULTURIST.

From what has been said it follows that the training of the horticulturist should be broad and thorough. The entrance requirements to most of our colleges of agriculture are or should be equal to those of the colleges of arts and sciences. Aside from these entrance requirements, his grounding in the natural sciences should be most thorough. In botany he should specialize in the physiological and cryptogamic fields. Formerly great stress was laid upon systematic botany. More stress should be laid upon the function of the plant and less upon its structure. In geology, in zoology, in physics, and in chemistry, the student of horticulture should be given a thorough drill. Of no less importance is economics and philosophy.

ON THE MEANING OF EDUCATION.

Finally it may be worth while to stop a moment and inquire what we aim at in securing an education.

The question is often asked, more frequently in past days than at the present time, does education pay? Well, this all hinges on the question of what does pay. Says my friend Professor Robertson of the MacDonald School of Agriculture: It is fundamentally a question of what we think is worth while. After all, what in life is worth while? Is it the trivial, is it the daily fleeting pleasure, or is it the thing which comes to us and enriches us intellectually? How much of the ordinary physical pleasures may a man secure,

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and yet feel exceedingly unhappy? Education then pays in proportion as it is increases a man's efficiency and in proportion as this efficiency is administered in an unselfish way,—in proportion as it adds to the sum total of the light and cheer of the world. Knowledge is a comfort and a benefit to every man, but knowledge and ability may often be separated. Knowledge and business ability are often separated. It was the eminent Thomas Huxley who said that Farmer Hodge could grow more turnips on an acre of land than he could, but still it would be possible for him, Huxley, to tell Hodge how he could still further increase his product. It seems unnecessary and almost trivial, says Robertson, at this time to consider the question of whether education pays; for we have such impressive examples constantly before our eyes of the influence of the uneducated, as for instance, in China, in Russia, with their millions of people, their sordid unrest, and their gross pleasures.

AN EDUCATED MAN.

It may be worth while to stop and consider what we mean by the term an educated man, and I am again quoting largely from Professor Robertson. Is it the man who speaks good English, who has travelled, but who may yet be inefficient? Does education mean efficiency in large degrees? Does it mean in the large sense personal ability, unselfishness, and public spiritedness? Does not education mean the training of the processes of the boy so that he may think clearly towards a definite end, that end to be useful and possibly beautiful? Does it not mean that his thought shall be given expression to not only in words, but in deeds and in things? May not a training of this kind engender habits of carefulness, of accuracy, of self-reliance? May not a training of this kind lead a man to seek mastery, not for selfish gain but for the service of his fellow men? How is education obtained? May we look upon the student who graduates from college as an educated man, when he has filled his mind with facts gained exclusively from lectures and reading? Is not a well-rounded education rather a series of experiences? If a man does nothing with his ideas except to recite them he can hardly be said to be educated. Then may we not say that education is a series of experiences leading out to performance, increasing ability, increasing efficiency, first ability to see, then ability to perform; the analytic power aided

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and assisted by the accomplishing power? These two when developed to their fullest extent describe to my mind an educated man. (Applause).

Prof. Craig was interrupted during his address by the music rendered by the Orpheus Club from the New Jersey State Model School.

President Roberts: If any of the members would like to ask Prof. Craig any questions, he will answer them.

Mr. John S. Collins: I would like to ask the Professor a question. If the pupils do not visit a model orchard, how are they going to know what is best in that line?

Prof. Craig: I think the gentleman may have misunderstood me. I said, we do not maintain a model orchard. We maintain an orchard for instruction purposes. I said, in addition, we made it a point to visit typical orchards, representing different types of fruit orchards, in different parts of the State. There the student, guided by us, saw what might be taken for him as a model orchard, in a practical illustration conducted by a man who was growing that type of fruit. He went to the pear grower, to the apple grower, the small fruit grower. It was our business to see that he went to an orchard which represented a model type in that.

Mr. John S. Collins: You mean to have some model trees in the orchard?

Prof. Craig: Not at all. That would be a matter of experiment, perhaps. But that is altogether different from a model orchard. You could have a half dozen model trees in an instruction orchard, but the rest would be trees for pruning, for spraying purposes, for illustrating purposes, which would spoil the effect of those six model trees. The fact is that you cannot maintain a model orchard and use it for experimental purposes or for instruction purposes. If your State, or your institution is big enough to give enough money to maintain a model orchard outside of the experimental one, I should be only too glad to see it done.

Mr. DeCou: I agree with our friend on the question ot a model orchard. We have been trying to keep a model orchard all our lives and have not succeeded. It seems to me it might be proper to have one corner of an acre or two devoted to a variety of fruit that suited that particular vicinity, and suited the market and have a model orchard there, and such a model orchard would not require an ex-

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tra appropriation; it would most likely take care of itself in a financial way. It seems to me one of the best things our Professors in the experimental stations could do would be to establish a model orchard in every experimental station; also to establish a balance sheet from that orchard, and find out how much it cost and how much it paid. Then bring it here before us so that we could know how to establish a model orchard which many of us have tried to do for several years.

Prof. Craig: I would like to say, in reply to that, that if your conditions at the experimental station here will approximate the conditions in the fruit growing section of the State where the orchards are likely to exist, I think the point is well taken. A model orchard, where I am situated, would be worth very little to the fruit growing section of the State. We have our model orchards in those sections, right where the commercial interests are situated, and, whether it be peach, or apple, or pear, and so on, we can take our student, and say, "That is a model orchard under the conditions which prevail there, and not under conditions dissimilar or unlike." You must have your model orchard under conditions which can be approximated in the commercial sections of the State.

Mr. John S. Collins: I am glad to know it would be no harm for them to see it. I am glad to hear that.

Mr. Fraser: I think the gentleman who just spoke rather put the onus of the student on the wrong man. If this Society wants a model orchard, I think it is the function of this Society to go to the legislature and say, "Give us some money for a model orchard." It is not the function of the men in the station to say, "We want a model orchard." It is up to these gentlemen here, and all the other fruit growers to say, "Here, give us some money for one." It is not the station man.

President Roberts: The subject is open for discussion. As a matter of fact we have several model orchards in the State that we can go to see; Mr. Collins' at Merchantville, and Mr. Repp's at Glassboro, and several others that I could refer to. Are there any other gentlemen who desire to ask Prof. Craig any questions?

Mr. John S. Collins: I am satisfied now. I thought, if the students wanted to see a model orchard, I did not see how the line could be drawn.

Prof. Craig: Will you have time to show them around if they come down?

Mr. John S. Collins: Yes, sir; I certainly should.

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Mr. Emmor Roberts: Mr. Collins spoke about a model orchard, at our experimental station, I infer he means. I think a little on that line would be beneficial, if they could do it. I remember quite a number of years ago, we had a gentleman here from an agricultural college, (Prof. Bailey) who made an excellent address, and he made us some recommendations, and among apples he recommended the Mackintosh Red as an early apple. The season for my putting out apple trees is pretty well gone. If it had been twenty years earlier, I think I should have taken the Mackintosh Red and tried it, as I did pretty nearly all other kinds. But I have been looking for the Mackintosh Red ever since. I have never seen them in our markets. Somebody has referred to them here to-day. I have never seen them. Now, if they could plant a tree or two there for people of the State to see, as a kind of an object lesson, I really think it would be a good thing, and perhaps they would plant some of the same kind.

President Roberts: The subject is open for discussion.

Mr. John S. Collins: I think I showed the gentleman a few Mackintosh Reds last year. They are a nice, bright apple, and a good apple.

Mr. Emmor Roberts: I do not remember ever having seen them. I may have seen them in Mr. Collins' orchard, but not enough of them to make any impression on my mind.

Mr. John S. Collins: Another thing Prof. Bailey recommended was the Dwarf Apple.

President Roberts: I think he did not recommend them for general planting.

Mr. John S. Collins: He recommended it for his planting.

Mr. Emmor Roberts: He had a special market for it. He did not recommend it for the average orchard.

President Roberts: Is there any further discussion of this subject?

Mr. Reid: I think Prof. Craig is all right in his position. As I understand the situation, it is necessary to have an orchard there in which they can prune and teach the students. If they have nothing but a model orchard, how could the student be taught to take an orchard under adverse conditions and make a model orchard of it? Their idea is to have an orchard with such things in it as we call adverse,—scale and so on—and a healthy tree, and take those things and teach the young man how to make a model orchard out of it.

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That they could not do if they had nothing but a model orchard. I think his position is all right for that purpose.

President Roberts: I know they are going to start one in New Brunswick, as I received a letter from them wanting me to tell them all about how to plant trees, how to care for them and so on, all the way from A. to Z. But it is a big undertaking, I have not done it yet, and I feel that they ask too much.

Mr. Albert Hansell: What is a model orchard? I have had quite some experience in other orchards. In farming an orchard in Burlington County we fertilize, cultivate, spray it, and all that. Then go over to Morris County and Sussex County, and if you use the same fertilizer there, the fruit will be black and spongy in color. All through that rocky soil one would have to work in an entirely different manner to produce good fruit. Our soil wants this and the conditions are just exactly different in different parts of the State.

President Roberts: I think if you ask what is a model orchard, and could see the orchard of Mr. Albert Hansell, you would see a good many model things in that orchard. I would recommend that for anybody who wants to go there.

Mr. Albert Hansell: I know what the conditions are in Burlington County, but when we go out to Warren County and see the land just as we saw it the other day, it would be entirely different.

President Roberts: In other words, if you put your model orchard up there, it would be entirely different.

Mr. Albert Hansell: In Burlington County we cannot cut any of the ground with anything short of a plow, as it becomes tightly packed. While up in Warren County it is light. It would be a great mistake to farm it in Warren County the same as you do in Burlington County.

President Roberts: In other words, each one must study his own local conditions.

Mr. Repp: The point that Mr. Hansell makes is very true. In some places nine-tenths of the trouble with trees is over-fertility. Just as he says, there are places where that would be the only thing to do, and other places where the soil is rich enough. A man must judge of the circumstances and conditions.

Prof. Craig: May I call attention to my subject, which was higher education in horticulture? A man may be taught in various ways. He may be taught as forcibly by the negative method as he may be by the positive method. What I should like to see connected with colleges would be illustration or demonstration orchards. Not

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merely model orchards illustrating one type of management, but an orchard which would illustrate different types of management. An orchard big enough so that you could cut it up in blocks, and treat one block by such a method, another by another method, and so on, so that you could illustrate the advantage of tillage and non-tillage, all in the same farm:—a demonstration or illustration orchard, rather than a model orchard. A man could see there the effects and the benefits, and here the disadvantages. Your student could do the same thing, but that would not answer the student's requirements educationally. He must have trees to actually work with, to cut if he likes to, to spray if he likes, to injure in one way or another, all for the benefit of his education. That was the point I had in mind. Have the illustration orchard. I do not care so much about the use of a permanent orchard, as I do an illustration orchard, which will illustrate something and teach something. That would have to be modified pretty freely in order to cover the different conditions even of your State here.

President Roberts: If you are ready, we will pass this subject and if there are any questions you would like to ask Prof. Craig, you can do so through the question box or you can put them later. We want to get all the information out of him that we can. There are certain old adages which most of us are familiar with. For instance, we all recognize the truth of the adage that water will not run up hill. There is another adage we have had to accept for a long time in relation to a very important industry in our state, ever since it was old enough, and that is, that the cranberry grower would not talk. We have looked that up and found he could talk, and now we have a cranberry grower who will talk. We are fortunate in having this afternoon, Mr. Edmund Braddock, of Medford, N. J., who will talk to us on the "Growing of Cranberries."

The Cranberry Industry.

EDMUND BRADDOCK, Medford, N. J.

Mr. President, Ladies and Gentlemen:

The cranberry and its cultivation, which now forms one of the industrial interests of the eastern and northeastern sections of the United States, is, perhaps, the least appreciated and the most underestimated of any of the agricultural pursuits of the country. In some localities, indeed, the conceptions of this industry are as

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varied as they are ludicrous and the idea of a cranberry growing beneath the soil like an onion would receive an acceptance as prompt as that of its growing on wild bushes or on climbing vines.

Just where the cranberry received its name is, by no means, obvious, though some authorities attribute it to the fact that the berries in their wild or natural state were allowed to remain on the vines until the spring when they may have been food for the cranes as they returned at that season.

The plant itself is of two distinct species of Vaccinium or Oxycoccus, while the fruit is of several species of this same order. In Europe the bogwort, or moorberry, which grows in swamp peat bogs, is of a dark red color, about one-fourth inches in diameter and corresponds to the small cranberry of this country. The more extensive berry, however, is the Vaccinium Macrocarpon and this is distinctly American.

The Oxycoccus Palustris, or common berry, growing wild, and the Oxycoccus Macrocarpus, or cultivated berry, are the two species most familiar to us here, and it is of the latter which this paper is to treat. This vine has a slender trailing stem with small ovate green leaves, glaucous beneath, and margins revolute and entire; the pedicels are ascending and bear on their summits pale rose colored flowers, axillary and solitary. The berry is of a bright roseate hue, 4—5 celled, many seeded and extremely tart. The berry loses a great deal of its sharp acid taste, however, if allowed to remain on the vines until spring, when it will be found to have taken on a dark red color, and to have become round and plump. It now bursts very readily if pressed for it contains a large amount of water at this season, and requires less sugar in cooking.

The cranberry seems to have found the land suitably adapted to its cultivation in but a few districts and these, in the order of the amount of their production, are the New England states, chief of which is Massachusetts, New Jersey, Wisconsin, and of later years Long Island. To all of the different sections the same general laws of selection and cultivation may be applied, though the climatic conditions must, of course, be regarded singly.

Considering first the fruit as purely the result of cultivation, the first great factor is the selection of the land and the kind of soil necessary for production. While the industry was yet in its infancy the first attempts at cultivation took on, to a large extent, the aspect of experimentation and the land, at that time made use of,

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has now become technically known as "Savannah" land, and to the modern practical grower this name is but the synonym of "gold-brick." These lands were situated in the timber districts of which they formed a part and were chosen for cultivation whenever found to lie below the average level of the surrounding ground. The soil, of a sandy composition, was covered with a layer of peat of from 6-9 inch in thickness. In the process of preparation the trees and underbrush had first to be cleared away and the stumps grubbed out; the crust of peat was then removed and used to build up a wall around the clearing. By this means all the water that might accumulate from the rains, or from any other source, could be retained on the bog.

The preparation of these meadows naturally demanded a large amount of time and an infinitely larger amount of money, consequently there was much anxiety as to the outcome. For the first few years after the vines began to bear the crops gave every evidence of fulfilling expectations and many similar meadows were set out. Soon, however, the surrounding timber began to be felled for the market to be utilized for fire-wood and lumber and with the passing of the trees went all the hopes of the owners of the "Savannah" lands. The forests had been the essential feature in the preservation of the meadows and without them to hold the moisture the cultivated lands became mere barren wastes, and hundreds of thousands of dollars were literally sunk.

The natural question which now arose was as to the kind of land most conducive to the growth of the cranberry. From their former experiences, the experimentors had come to realize the importance and even the necessity of a constant water supply, and were now ready to give this feature its proper consideration.

In selecting a site for a meadow the practical grower will probably choose the bottom land along the streams, or he may even drain off an old pond where he is likely to get a running stream and a place to erect a dam for flooding the bog during the winter months. Here, too, he is almost sure of finding a damp, muddy soil for which the fruit bears a strong affinity. In the valley land a suitable soil is often indicated by the presence of magnolia, gum and maple trees.

After the selection of the land there begins the more arduous task of preparation covering a period of from 5—7 years, during which the timber must be cut off, the underbrush burned and the stumps removed. A dam now becomes necessary with the completion of

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which the bog is flooded and the water line staked out to show to what extent the further clearing must be carried. This further clearing may be accomplished by two methods. The turf, with all its mass of roots and underground vines, may be grubbed out entirely, or it may be removed after a process of decomposition, made possible by flooding. This latter course has become almost universally adopted and is by far the least expensive as well as the most successful. By this process the water is allowed to remain on the meadows for two or three years, with occasional changes so that the air may get at the turf. At the approximate end of this period the water is drawn; approximate I say, because it has been found to save labor and expense by keeping the water on until well into the month of July. The refuse is now cleared off and the main ditch opened, other branches, too, being dug, perhaps, that the meadow may be properly drained. After this rougher preliminary preparation a coating or layer of sand, several inches thick is often spread over the lower, more marshy portions, and on this the vines are set out. This sand, by the way, is mostly obtained by cutting down knolls and digging out the edges of the bogs which thus accomplishes a two-fold purpose by also allowing the extreme edges of the meadow to be under water in the winter.

The vines for setting out the new meadows are secured from old bogs either by pulling them up entire or by mowing where they are sufficiently long to allow it, any portion of the vine readily taking root when pressed into the moist soil. A boy is usually employed to plant or drop these vines in rows so that they divide the ground off in checkerboard fashion, the parallel lines being from 12—18 inches distant from each other. Behind the boy walks a man who, by means of a forked tool, presses the stem of the vine into the mud and secures it there by stamping the soil down on top of it with his heel. A few years after planting the vines are well sanded so that the meadow, perhaps, receives such a coating 2 or 3 inches in thickness, although much of the average in New Jersey is not sanded.

The planting is done in the spring or fall and the vines now demand four years of careful cultivation before a crop can be looked for; some fruit is often gathered the third year. This cultivation consists in keeping out insects and all forms of foreign growths. The work of keeping the meadow free from noxious vegetation is most expensive and difficult for a great deal of such work has to be done entirely with the hands. Of the dominating

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vegetation there is some of course, much more harmful than the rest and the greatest effort should naturally be expended in the eradication of these, among which are woody growths of all kinds; briars of all kinds; ferns of all kinds; wild ivy; bog grass, known to many as "nigger-head;" the large turkey headed bull rush, and one of the worst of all the blood root. Beside these there are many grasses which would be hard to name and difficult to describe. Now in the effort to destroy this vegetation many different means must be employed, and it is necessary to use the fingers, the hand, the scythe, the turfing-hoe, the grass-hook, and sulphuric acid. Just the proper times and cases in which these different means should be employed rests largely on the judgment of the grower. Every fall the water must be raised and the vines kept flooded until the spring is well advanced; this is necessary for several reasons. The water, itself, contains more or less vegetable matter besides that which has gathered around the vines, and all this decomposes during the winter and precipitates forming a natural fertilizer. There is then a natural process of fertilization going on every winter and spring, but at times this proves insufficient and an added nourishment seems to be needed, in this case a coating of bone phosphate or ground bone is spread over the meadow from which the vines take up the phosphoric acid and ammonia; this stimulates the growth of vines and naturally more berries.

Then, too, by flooding, the various insects are killed and the vines thus protected from their ravages. Growers often make the great mistake of drawing off their water too early in the spring, for where this is done the grass springs up and chokes down the vines. If, however, the bog is kept flooded until warm weather has made itself permanent, the vines will have already been meeting the change under water and, when the gates are opened, will not be so slow as to be hindered by any other vegetation.

The question of proper means of flooding and irrigating was for a long time a serious proposition to the growers, but experience has again been the practical teacher and has shown the proper methods to be pursued. Under the old system of flooding, dams were erected with gates directly across the course of the water, and, as the gates were lowered, the water backed up and threw its whole force against them, nor was it an unusual occurrence to find the whole set of gates with their immense timbers, carried far down stream and a huge portion of the dam washed away. This became such a regular occurrence and carried with it such a loss

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that some new system of flooding had to be devised; the result was the establishment of the "Trunk" flood gate, or stand pipe system. By this more modern method the strain has been greatly relieved and so satisfactorily has it met the needs of economy, simplicity, efficiency and durability that it is rapidly displacing the older and more expensive system.

The essential element for flooding is, of course, a running stream, and if this is not directly in the line of the land about to undergo cultivation it becomes necessary to divert the course of some stream which has been well calculated on before the selection of the new meadow. This diverting process consists simply in tapping the stream and running an irrigating ditch from it through the meadow. The course of the original stream, however, must not in any way be changed for all the owners farther down are insured by law of their water supply.

In many cases a grower has several ponds on the course of one stream with a series of dams for flooding them, inasmuch as the area to be covered would be far too extensive to be controlled by one set of gates. Where such a series of ponds exists there is mostly a supply pond or reservoir maintained at the upper end with a continual head of water and this may be regarded somewhat in the light of an emergency pond.

Often in the spring, after the winter's water has been drawn off, there may be seen on the vines places where they appear to be glued together by some silky substance and this is nothing more nor less than a cocoon, made by a species of miller, which contains the deposit of the insect. As soon as the warm sun of spring reaches this, it opens and the eggs hatch out a small green worm which feeds upon the stem of the vines. Now as this cocoon breaks and the eggs are beginning to hatch the water is immediately let down from the upper supply pond and allowed to cover the vines of the lower meadows. In this way the vines are entirely freed from insect life before they begin to bud, but it is very important to know just when to second flood the vines. Again in the fall is the resorvoir likely to be called on for, now, though the berries are ripe, they may be left on the vines to allow the crisp air of autumn to color them up, or for various reasons the pickers may be delayed in gathering them. In either instance the fruit is apt to be caught by an early frost, and whenever the indications or the government warnings are favorable to such, it is always good policy to fill the ditches of the meadows with the water from

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above, which has become warmed by standing sluggishly in the sun, and this, in vaporizing, covers the vines with a warm layer of mist through which the frost cannot penetrate, but in the case of a freeze the vines and fruit must be covered with water. The supply pond, moreover, insures a constant flow of water through the ditches in the dry weather when it is most needed.

There is still another method of irrigation which takes on decidedly more of the artificial nature than any of the above systems; this is the method of pumping water from artesian wells, in which the pumping is done by wind-mills. This method is not, as yet, on any solid basis of establishment and is purely in the experimental stage.

By these methods of irrigation, especially that of diverting streams, many of the old discarded "Savannah" lands have been brought back to use and are again yielding good crops, for, be it said, much of the soil in those original meadows is especially adapted to the cultivation of the fruit, particularly so as it has become more thoroughly decomposed.

Another variety of land now beginning to prove largely successful is the low grassy meadow which is partially under water. Here the cranberry vine exists in its natural state entangled with a wild coarse grass. By erecting a low dam such ground can easily be flooded, and after being totally submerged for a couple of years all the vegetation will have been completely killed. It then becomes necessary to drain the land and, after ditching, reset it for cultivation. The cost of preparing such land is extremely small in comparison with that of the swamp lands, for the simple reason that it is so much more easily brought into condition for cultivation. The mere land value, itself, also amounts to very little.

In the valley and meadow the cost of the original land, together with the outlay demanded for preparation, is an item well worth consideration. The site selected may, perchance, be but a small portion of a section of timber land which can only be purchased as one solid tract, in which case much unnecessary waste must be bought in order to get the piece desired. The meadow or swamp land will cost from $10—$20 per acre, while the surrounding tract will be much less, probably only $1 per acre. But this is only the beginning, and by far the smallest part of the cost of the undertaking. The preparation raises this amount very materially and approximates, in itself, about $200 per acre at the very outset. Though this will probably cover the preparation, the outlay is by

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no means at an end as there must be a constant expenditure for keeping up the land to maintain, at least, an average yield. This amount can never be estimated for the conditions are so unlike on the different meadows, and the range so great from year to year, that it would be utterly impossible.

It is also extremely difficult to determine exactly what constitutes an average yield, for nowhere is there such uncertainty as in cranberry growing, and then, too, the yield of one meadow may be out of all proportion with that of another. Some local bogs have yielded as many as 300 bushels per acre, while in Cape Cod growers have taken 500 bushels off the same area. It can be safely said, however, that a yield of 100 bushels to the acre may be considered a good crop, and that the average lies somewhere between 50 and 100 bushels.

In the spring the water is drawn off between the 1st and 20th of May and the bloom appears on the vine about the 1st or 15th of July. If careless about the time of drawing the water, and it be drawn too soon, the bud may get nipped by a late frost, or if drawn too late, the berry will be retarded and may be nipped by an early autumn frost; there seems to be greater danger from late frost in spring. The berries ripen very early in the fall but are often left on the vines for a week or two for the cool evening air to give them a part of their rosy hue. They may, however, be picked without waiting for the color at all, for as soon as they become white and their green color has entirely left, then the seeds have begun to turn dark and the fruit is ready to be gathered. If, they be picked, however, before the green color has disappeared, the berries will shrivel up and though they take on a slight pinkish red color, will never be sound and wholesome.

If, on the other hand, they be allowed to stay on the vine and take on some of their natural color they increase tremendously in size and, often during the mere postponement of a week, they have increased enough in size to pay for the whole cost of gathering. This postponement should never be so long as to allow the berry to become fully matured, for full maturity is but the stepping stone to decomposition. The matured berries would keep perfectly well in this condition if left on the vines all winter, but in the process of cleaning and marketing they are very likely to deteriorate. We find berries gathered before fully ripe are better for shipping.

There are, too, other equally important reasons for an early gathering; the danger of losing the entire crop by frost is an

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incentive to early picking, and then the labor question is one that must be taken into consideration as it is often necessary to have the fruit gathered when it can most conveniently be done.

On the whole a start is mostly made during the first half of September and the grower who delays beyond this point has the odds against him according to the law of chances.

The labor employed in picking is mostly taken from the Italian element in the large cities, where they work by the day throughout the rest of the year. Nearly every grower has an old Italian employee, who is known as his row boss, and to whom is entrusted the work of obtaining pickers. These Italians, men, women and children, come out to the country by the carload, and are driven in shelvings to the bogs where they live in houses, built especially for their use. After the crop is gathered they return to the cities and seldom, if ever, do they create any nuisances in those neighborhoods where they are engaged to pick.

What can be said, on this same score, concerning the natives thus employed? If they come from the immediate locality in which they are employed then they will probably make no disturbances. Such natives, however, form an almost infinitesimal part of the purely American pickers and could by no means meet the demand for the number required to gather a year's crop. With each new year the growers in New Jersey are having greater difficulty in getting people to pick the berries, and the more progressive are beginning to adopt the method which has been in force for some years in Cape Cod.

At present the berries are picked entirely by hand in New Jersey, the use of the "scoop" being prohibited by the extreme length and thickness of the vines. In Cape Cod, fewer pickers are needed from the fact that their vines are so cultivated as to allow the use of the "scoop" which is provided with prongs or fingers and is run through the vines somewhat as a comb might be when combing the vines up from the roots. The main growers think hand picking will soon be a thing of the past and the fruit will all be gathered with scoops. The Cape Cod land is very level and the meadows are well sanded. The vines are mowed often and kept very short. All foreign vegetation is carefully guarded against and weeded out as fast as it makes an appearance. Such care, of course, demands a much greater expenditure of money, but this is compensated for in the picknig, for with the vines in such an excellent condition many more berries can be gathered for the same outlay than would

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be at all possible in other sections. In New Jersey, for instance, where the hands are employed entirely, the pickers carry peck boxes into the bogs, and as these are filled and turned in they receive a ticket which is redeemable, on pay-day, for ten cents. Where the picking is unusually poor twelve cents a peck is often paid, and the cost of gathering then ranges from forty to fifty cents a bushel. In Cape Cod the use of the scoop greatly reduces this cost, and a barrel, containing three bushels, can be gathered for about twenty-five cents.

As the berries are picked they are placed in crates by the edge of the bog and are then carted to the cranberry house or cellar as the case may be. Here they are stored in bins of from 4—8 inches in depth, so arranged in tiers as to permit a free circulation of air. This serves to dry out the berries and to prevent decomposition in the cellar. The temperature of the cellar must be in some way regulated, for if the thermometer drops below 40 degrees F., the berries become chilled and when again brought into a warmer atmosphere will become soft and pudgy. Most of our large growers store their fruit above ground in bushel crates carted direct from the bogs.

Very often the berries are sold "in the dirt" to the jobbers who store them and clean them for the market as their trade needs them, (the fruit keeping better uncleaned). Many growers feel that they can command higher prices, however, if they clean their own fruit and indeed, many buyers, or commission men, will, at times, take them only on this condition.

In cleaning the berries they are run through a machine in which they first pass over a revolving fan and here all the grass, dead vines and lighter dirt, such as leaves, are blown out. They then pass over a series of bounces from which the sound berries rebound and fall into a shoot, while the soft fruit drops through into the waste receptacle. The sound berries roll out on an exposed table of canvas and, as they go by on this, the faulty ones are picked out by hand and discarded. Some large growers also use assorting tables; in this way they clean, pack and ship from two to six car loads a week.

After coming from the machine the fruit is ready for packing and placing on the market. It is packed in crates or barrels, the latter of which has come more largely into favor in the last few years. Here the same principle of packing must be adhered to as in every other case where the goods are to be preserved, only in this

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instance, it must, if anything, be more strenuously followed out than is usual. That the fruit should be packed tightly is essential in order to prevent it bruising against the barrel or against each other.

In New Jersey the Legislature has established a standard size, both of crate and barrel, for "buying or selling in the State, or for transporting same outside of the State," and, by an act of 1888, all crates are compelled to hold 32 quarts, rounded measure, and to have such capacity, shall conform to the regulation size: 22 inches in length, 12 inches in depth, and 7½ inches in width, inside clear measure. And for any breach of this act there shall be a fine of $2 for each package and the cost of the produce under inspection.

In a supplement to this act, approved April 14th, 1903, the regulation standard was adopted for all barrels used in like commodity and the legal capacity for these is 100 quarts. The dimensions are here also carefully stated: the head shall be 16 inches in diameter, staves 28½ inches long, bilge 58⅝ inches outside circumference and each barrel shall be branded "Standard." For every infringement of this supplement there shall be imposed a fine of $3 per barrel together with the costs of the proceedings.

As to placing the berries on the market—this is comparatively a simple matter as far as the grower is concerned for he usually makes his transaction with some wholesale commission house and the further distribution then lies entirely with that firm. The returns from a year's crop, however, depend largely on the grower's astuteness and on his ability to foresee the conditions that will prevail on the market to influence the selling price of his fruit. If for any reason, the quotations seem likely to fall, he will probably make an early sale, though he may hold off in the hope of placing his goods on a rising market. Berries have been held as far along in the winter as the last of Feb., but now with the influx of southern fruit coming so early in the spring, strenuous efforts are made to have all the cranberries placed by the 1st of Jan., in the hands of the dealers.

In this day of monopolies and trusts the cranberry men are not behind in their efforts to control the market and, if possible, to some small extent, to keep the prices up within hailing distance of the standard of former days. All growers controlling large interests have united and formed a mutual association for placing the berries on the market in a sound condition.

As yet this association has made no endeavor to impose on the

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public and, indeed, is too far sighted to attempt any such move as it would kill the primary object for which all cranberry associations are formed—that of making the appreciation of the fruit more widely spread and thereby increasing the demand for it. The average price per bushel which the grower to-day receives for his berries would be almost impossible to determine, but it probably ranges somewhere between $2.00-$3.00. Fifteen years ago it was by no means an uncommon thing for the same men to dispose of their entire crop for from $3-$4 a bushel, and they were the palmy days. Now most growers consider $6 per barrel, F. O. B. at the nearest station, a satisfactory and remunerative price.

On the market the berries are quoted under their commercial names, as for instance: "the early blacks" or the "Jersey's dark and light," which is simply the standard berry of Cape Cod and of New Jersey. In their quotations the first is usually slightly in advance, probably somewhere near the proportion of $3, $2.50, $2.00.

Under these there are such fancy special brands as the "Bell" and "Bugle," the "Howe" and "Mathew," and the "Champion," the "Early Black" and "Early Red." These fancy berries are the result of cultivation and separation, the names being derived from the cultivator or from some particular peculiarity of each class.

Of course, the market prices are bound to go up when for any reason there is a short crop, and this is by no means rare. It is, indeed, a thing to be marveled at that the crops are not more often failures than statistics show, for there are many natural enemies to be combatted against and that these are so successfully baffled is but evidence of the progressive attitude on the part of the growers. Probably the greatest enemy of the cranberry is frost and this has to be guarded against both in the spring, when the water is drawn, and in the early fall, when the berries begin to ripen. The means of guarding against this have been shown above, but so dangerous is it that the growers' judgment is not relied on entirely, but warnings are every year sent out by the weather bureau.

In every locality where meadows are situated there is a local representative of the American Cranberry Growers' Association to whom special telegrams are sent by the government whenever there is a prediction of frost, and he holds himself responsible for making the warning known to the other growers of that vicinity. With all his precautions, however, the grower is greatly at the mercy of the frost and very often is the crop seriously nipped as was the case both

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in 1901 and 1902. Especially was this so in the latter instance when the running expenses of that current year became a partial loss.

Hail storms, though occurring but occasionally with sufficient force do, at times, cut the vines most seriously. In the summer of 1900 a heavy hail storm passing over New Jersey so cut the growing berries that in some sections it was difficult to gather enough for a single pie. Then the forest fires, too, that now and then get started either through accident, carelessness or pure intention, and rush ominously through the Jersey pines, carry destruction in their wake. And a more fatal enemy, too, is this than the others, for it absolutely kills the vines it passes over and that unfortunate meadow has to be entirely reset; three or four subsequent years thus go by with no crop at all. The methods employed in fighting such fires and in turning them aside from their course is rather beyond the scope of this paper and suffice it to say that the progressive growers are trimming away all underbrush and cutting down all the timber immediately around the edges of their bogs, leaving a clearing of about fifty feet on which there is no material to help any advancing fire reach the vines. Many growers also burn around their bogs annually, cleaning away the underbrush and leaves which not only serves as a safeguard against forest fires, but destroys the insects burrowed away in the trash near the edge of the bogs.

The need for drains and ditches throughout the meadows is especially great and they largely decrease the danger of scald, for should large pools be allowed to stand stagnant among the vines there would be an immense number of berries lost in this manner. These short summer showers, where a hard rain is immediately superseded by clear sunshiny weather, are also most conducive to this natural cooking.

Our scientific men think now that the rot or scald is a fungous disease, and some growers are spraying their bogs with a Bourdeaux Mixture. A few instances show some improvement, but it is experimental as yet and the growers are looking on with interest. Fungous growths and insects are not the least destructive of the numerous enemies but they are more easily coped with than some of the others. On the whole this list presents a most formidable array and a constant care is necessary to protect the vines from their ravages. So persistent, indeed, are they that to be a really successful grower of cranberries a man should first have some experience; he should be where he can personally supervise the care of his lands and his

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mind and activities should be directed carefully on his undertaking twenty-four hours every day and 365 days a year.

Nature is the cranberry growers' worst enemy and, as such, she exhibits herself in various forms. From his brother, however, a man need have little fear, for seldom are the dams, vines or any of the property maliciously disturbed. This may be somewhat due to the protection afforded the owner by law for by act of 1846, which was further supplemented in 1871, it is unlawful even to disturb the wild vines growing in any person's land, and for pulling such vines or any like offence there may be imposed a fine not exceeding $50 or imprisonment not exceeding one year.

From the mere fact, however, of being so seldom called into active life this law has practically become a dead letter.

With such enemies continually at work tending to reduce the size of the crop and pitted against these the brain and energy of man it is easy to be seen that there will be great fluctuations in the number of bushels gathered from year to year. The following shows the crops of cranberries in bushels from estimates and actual movement:

New England, 1905.	425,000 bu. increase, 59 per cent.	675,750
N.J.and Long Island	275,000 bu. increase, 23 per cent.	338,250
The West	120,000 bu. increase,	125,000
	820,000	1,139,000

This year's crop may have been reduced to 1,000,000 bu., there being more loss than usual.

With such a continual uncertainty as to the outcome of the next year's crop and the ever seductive possibility of an enormous yield the cranberry industry must possess a wealth of fascination for the venturesome mind, and this it must be that calls so many men to invest a large part of their capital in such a speculative enterprise. Aside from all ideas of speculation, however, the industry is one of very great interest and makes an admirable occupation for a gentleman of moderate means, who desires something upon which to centre his mind and who has a decided love for nature in her wilder and more rugged moods. It is, as well, a fairly lucrative occupation and on the whole the returns usually stamp the outlay as well invested.

The value of the cranberry itself is very great and is coming to

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receive a higher appreciation from year to year. As a food it takes on somewhat the aspect of a delicacy, while its medicinal qualities are also recognized to a large extent. It is regarded as a relief for rheumatism and various skin diseases and when used as a constant diet has a noticeable effect in clearing the complexion.

As a food again the fruit first gained its popularity as a side dish that has now become indispensable for a turkey dinner, in fact such a dinner without cranberry would by no means be regarded as "au fait." Cranberry pie, tarts and even sweet-meats are now coming into their share of a well deserved popularity. To thoroughly appreciate these dishes, however, two things are most important, 1st, the berries should be sound fruit of the first picking, and second, they should be properly cooked.

It is often said and not without some truth possible, that the first berries are sent to the distant markets while the nearer markets are partially supplied from the second picking. This second picking is carried on by the lower classes, who are allowed to go over the meadows after the regular picking is done, and gather whatever happens to have been left, and such pickings usually include many soft and scalded berries.

As to the proper method of cooking the fruit there is, indeed, lamentable ignorance among the good housewives and maids of the country, and in this instance, at least, they might profitably follow the advice of some of the opposite sex who have carefully studied the cranberry in all its various phases.

The berry should always be cooked in a porcelain vessel, when stewing, for the acid of the berry has a peculiar action on iron and when cooked in kettles of this metal absorbs a foreign flavor. Will give you Mrs. Braddock's receipt for stewing:

1 qt. cranberries.
1 pt. boiling water.
1 lb. granulated sugar.

Have a good fire, and boil them quickly, say five minutes, mash them with a paddle around the sides of the kettle and your sauce is done. For jelly:—1 qt. cranberries and 1 pt. boiling water. Cook the same as for sauce then strain through a fine sieve, forcing it through with a masher. Return to the stove and as it comes to a boil add 1 lb. sugar and stir until it is well dissolved. Boil one minute and pour into the moulds. These are the chief principles which should always be followed to insure the greatest satisfaction.

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President Roberts: The subject is now open for discussion.

Mr. John S. Collins: I would like to ask if there is ever any trouble to get pickers among the cranberry growers, as well as other growers, unless you get them from the city in the way you mention. It would seem as though they might be secured nearer by.

Mr. Braddock: I have never heard any objection or any trouble in reference to that matter. It certainly would affect us very materially if we could not get them. I have never had to take any action along that line.

A Member: I heard about the scoop and supposed that might be used more.

Mr. Braddock: We have never had any trouble with hand picking, but, as the scoop is coming in favor now, probably that would be our way out of it if we had trouble.

A Member: It would do on cranberries, I suppose, but it would not do on strawberries.

President Roberts: What action will you take on this very interesting paper?

On motion of Mr. Emmor Roberts it was received and referred to the Executive Committee.

President Roberts: I am asked to announce that a meeting of the Nominating Committee will be held to-morrow morning in Secretary Dye's office at nine o'clock. We will next listen to an address by Mr. Gabriel Hiester on "Apples."

Apples.

GABRIEL HIESTER, President of the State Horticultural Association of Pennsylvania.

Mr. President, Ladies and Gentlemen:

I am very glad to be with you to-day. I carried with me through the whole year a very pleasant recollection of my visit to Trenton last winter, and, when your secretary wrote, asking me to appoint delegates from our society, I very promptly appointed two of our members, and they are here with me. I notice that one of them has brought his troubles along with him, in the form of a bundle which he carried under his arm, that I suppose he is going to ask some information on after awhile. I hope you will be able to give him the information he wants. I am very glad too that you have

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assigned to me a subject of such universal interest. The reports of nurserymen everywhere show us that there never was such activity in apple tree planting as at the present time.

From Oregon to Virginia and from Maine to Missouri comes the same report. Large commercial orchards are being planted; and not only here, but in Australia, in Tasmania, in Nova Scotia and Canada, they are doing the same thing, and now, while one set of men is busily engaged enlarging the area planted in apples, another set of men is just as busily engaged in opening up new markets for them. The Canadian government has been very active in this respect, sending special agents to Germany, France, Scotland and England, with choice consignments of fruit, placing them in the hands of prominent dealers there who have never handled Canadian apples before, and thus opening up a way for larger consignments in the future. We also hear that Canada is shipping apples to Hong Kong, and they tell us that not only the English residents there are buying these apples, but the Chinese themselves are becoming great apple eaters. The growers of Ben Davis in the Ozarks have found an outlet for some of their high colored fruit in the Islands of the Pacific. I think it is a good place to send them, too. And we find that Arizona and Nebraska have been making successful shipments to Alaska. So that, wherever the white man has gone and settled, we find the apple has followed. It is eaten and it is relished by everyone. It is no longer a luxury, but it is a matter of daily consumption in all our families. And so, as time goes on, we will find that more and more apples will be needed to supply the constantly increasing demand.

But, notwithstanding this fact, we may, in the near future be called on to meet a more severe competition than we have to-day, and the question naturally arises, how shall we prepare to meet this competition? Shall we quit planting apples and turn our attention to some other fruit? I think not. I think we can go right on planting as we have done, but we must be very careful to plant the right tree in the right place. I think that lies at the root of the whole matter. In travelling over the country I notice that apples seem to grow everywhere, and apples seem to sell everywhere. Yet, all varieties do not grow equally well on the same farm. Neither do they sell equally well in any one market.

Hence the right tree for me to plant, it seems to me, would be the tree that will bring its fruit to the highest degree of perfection on my farm, without regard to what it will do down here in New Jer-

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sey; that is, the tree that will develop its best qualities on my farm, and at the same time will bring top price in some market that I can reach.

Before we select the tree we want to be sure that we have the right place to plant it. I want to be sure that my farm is the right place. The kind of soil does not seem to make much difference. Apples grow in clay, in sand, in gravel, in shale and in a mixture of all these, provided the soil is deep, well drained and properly supplied with humus, and that it is elevated somewhat above the immediately surrounding lands and slightly rolling to admit of air drainage.

This matter of altitude,—not altitude above the sea level,—but altitude above the immediately surrounding land is a matter of very great importance. I have seen a difference of only twenty feet make the difference between a cloudy skin and a clear skin in apples. Loose stones and boulders are no objection. The loose, flat stones that we find on some of our rough lands, serve as a mulch, the very best mulch that we can have and prevent evaporation. And the trees will send their roots down alongside the boulders and under the boulders, and find moisture there. So that very often the very roughest field on the farm, one we cannot work profitably in ordinary farm crops, may be just the very best orchard site.

When we find that our soil will comply with these conditions, we are ready to go ahead and select a tree. If we have not these conditions, or cannot bring our land into this condition, then, if we are determined to plant an orchard, we had better go and buy another piece of property. I would advise very strongly at this time against anybody planting an apple tree for profit on uncongenial soil, because, I think that we want to get the very best return from the tree that it is possible to get.

As to the tree, it is a curious fact that out of all the many varieties we have to select from, there are only a very few that will do very well, that will bring out the very best qualities of their fruit on any one farm. We find that the reputations of all our leading fruit districts have been built up largely on the success of one variety. Take the Gravenstein, it has probably done more for the reputation of the Annapolis Valley in Nova Scotia than any other apple. And so we may cite Hubbardston's None-Such in the Hudson River Valley, and the Northern Spy in the Western Part of New York state, near Lake Ontario, and the New York Imperial in the South Mountain region in Pennsylvania and the Albermarle Pippin, in the

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South Mountain region of Virginia. Just one apple that has built up the reputation of each of these different fruit districts.

There is another fact that we notice in our Eastern markets, in each city market there seems to be an apple for each season of the year. One apple will command a higher price, will be more sought after, while its season lasts, than any other. To illustrate by the Harrisburg market, with which I am more familiar than with any other, during the month of August the Summer Rambo is in its prime. The people of Harrisburg have acquired a taste for the Summer Rambo, and as long as it is on the market stand, you cannot sell any other apple off that same stand. About the first of September the Smoke House comes in, and for a month, as long as there is a basket of Smoke House in your wagon, you cannot sell any other apple, and it holds first place until the Spy and the King take its place. They hold the market until the holidays, when the Baldwin, Greening, York Imperial and others come in. So, in making our selections, we want to consider the orchards in our neighborhood, the trees growing right around our own farm rather than the catalogues of nurseries from other states. We should get the variety that does best in our own immediate neighborhood, and sells best in our own market.

This list which I have just named for the Harrisburg market through the season can be grown very successfully on the east side of the Susquehanna River on the rich agricultural lands of Dauphin County, and down through Berks and Bucks County, you will find that these apples can be grown successfully. While, right on the other side of the river, opposite Harrisburg, they are all more or less unsatisfactory, not only unsatisfactory as to crop, but unsatisfactory as to quality, and those people on the west side of the river have to take such varieties as the Grime's Golden, Rome Beauty, and York Imperial that have a different season from those grown on the other side. If they want to sell in Harrisburg, they have to bring them in after the holidays, or else find another market altogether.

The fact is they do not sell them in Harrisburg. Buyers have come from St. Paul and Minneapolis, and gone over in Adams and Franklin counties and bought those apples and paid higher prices on the tree than any Harrisburg dealer would pay. In conversation with a large commercial man last week, I asked him, "Why is it your men come way in here to Adams County, Pennsylvania, and pay a high price for the York Imperial apples, when you have

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the famous Ozark region so much nearer?" He said, "That's easy. Those apples are better and cheaper. After that long haul they pan out better and have better quality than any of the Missouri apples." That just accounts for it. Those Franklin County men have not made a mistake in making York Imperial their leader. It originated in that neighborhood and reaches a degree of perfection never found elsewhere. Here we have an instance where a large city market, a railroad centre, and a large distributing point, does not furnish as good a market for apples grown within an hour's ride by freight, as one a thousand miles away, simply because the people of that market have cultivated a taste for other kinds of apples.

It is often said that flavor does not make any difference in selling fruit. People buy the apples by eye, not by taste. But, in an experience of over thirty years in the retail market, I have found exactly the opposite to be the case. It is true the eye is attracted first, but I know that when a man has acquired a taste for an apple of high quality, he will buy that apple as long as it is in season, in preference to any other. He will pay a higher price for it than he will for any other, and, if you will give it to him out of season, he will pay a price that will abundantly compensate you for keeping it for him in cold storage.

You men in New Jersey should be, and I suppose you are, more interested in the local market than you are in the general market. Where this meeting is held, Trenton, is right in the centre of the most thickly populated section of the United States. I just made this discovery the other day in reading the prospectus of the trolley line from New York to Philadelphia. They tell us that here is a railroad eighty-eight miles long, running in almost a direct line, with Philadelphia at one end and New York at the other. Along this line or immediately tributary to it are approximately six millions of people, it is the most wonderful home market to be found anywhere in the world. There is nothing that can approach it, and that is the market, it seems to me, that you men ought to cater to. If your people have not acquired a taste for some good variety that you grow, then you ought to teach them right away, before those new orchards begin to bear, and let them acquire a taste for your apples; and, if you expect to hold this wonderful market against all comers, the only way that you can do it is by furnishing them fruit of high quality. I am perfectly satisfied of that. You have the advantage here of all others, in this, that you

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can grow the summer and fall varieties, which cannot be shipped long distances, except at great expense, and which are being more and more used every year. Many of our fall varieties, if picked at the proper time, can be placed in cold storage, and are ready for the market at any time, and can be brought out and placed on the home market whenever the market is ready for them. So that you have a very long season for handling this fruit.

There is another point right here, and that is, that many of our best varieties of fruit, those that we seem to like most, those that will command the highest price in the market, have some constitutional weakness. You are all familiar with the Spitzenberg, and its poor foliage, and the King, being liable to canker that will attack it near the ground and soon end its life. And then we have the Mother apple, the best September apple that we can grow in Pennsylvania, which is such a poor, miserable little nursery tree, that there is, I think, only one nurseryman in the State who will keep it on his catalogue. I do not know whether he is growing it now or not.

It has been suggested that if we want to grow these weaker varieties, these varieties that have some constitutional weakness, we shall plant some good, healthy, robust variety, with a good root system, like Northern Spy, or Ben Davis, or Tallman's Sweet, or one of the many varieties of Russets,—there are a number of them that have strong, healthy stocks,—and then double work these finer and more desirable varieties on them. And, in this connection, about twenty years ago our scientific men and many of our most advanced orchard growers, began to discuss the question of pedigree trees, or rather the practice of selecting the scion or bud from bearing trees of known record for a number of years of health and productiveness. I do not know who first suggested this idea, but it seems to me that Prof. Bailey, George T. Powell, and Col. Edwards, probably were the pioneer experimenters in this direction. Mr. Powell tells of an orchard which he planted as an experiment over seventeen years ago, taking Northern Spy trees, planting good, strong, healthy, young trees. He then topworked them to scions from a King tree that had lived to be fifty years old, and had borne almost annual crops, and was in good healthy condition. After seventeen years, he says, those trees are not only all alive, but they are all remarkably healthy and remarkably productive; and he pronounces the experiment an unqualified success.

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I have been using this plan in the production of my peach trees for a number of years, my practice being to have a friend who is a nurseryman come to my place every year when the peaches are on the trees, and go out and walk over the orchard with me and pick out certain trees that are perfectly healthy and vigorous, and seem to bear the type of fruit that I want. Then, after we have selected those trees we go over them and cut the buds from the strongest branches on those trees; and by following that plan for a few years we have secured a remarkably uniform strain of peaches.

When I was a young man there was an old apple tree standing in the orchard that my father planted that bore the finest yellow Bellefleurs I ever saw, a great big, smooth, yellow apple, with red cheek, that always sold well in the market. In 1871 my brother and I each decided to plant an orchard. He secured a lot of seedlings, took scions of this old tree and worked them on those seedlings. I was in a hurry, I did not want to wait so long. I did not want to lose a year or two; so I bought my trees, yellow Bellefleurs, from one of our best and most reliable nurserymen. Those orchards were planted under practically the same conditions, on the same soil, with the same elevation, the fields almost adjoining. My trees received very much better care than the others, because, in the course of a few years my brother's orchard went into the hands of tenants. But, from the time they began to bear, those trees that were grown from the scions of that one old tree that was so much better than all others, produced apples, notwithstanding the lack of care, that would command at least a dollar a barrel more than I could get for mine. And that is so year after year.

I have seen so many instances of this kind, that I am perfectly satisfied if we want to obtain the very best results, if we want a tree that will keep us at the head of the procession all the time, and produce an apple that will sell in any market, whether there is a glut or whether the market is bare, we must produce our apples in this way that has been recommended by Mr. Powell and others for so many years. That is, take a good, strong, healthy, vigorous young tree, with a strong root system, and topwork on it the variety desired, and in selecting those buds and scions we are going to topwork, be careful that we take them from trees that have a long record of productiveness, and a record of healthfulness.

Now, Mr. President, this is a great big subject, I have just opened it. I have tried to tell you what kind of a tree to plant, how to get

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that tree, and where to plant it. I do not want to get over the fence on my neighbor's ground, for to-morrow we are going to hear from a gentleman from New Jersey how to take care of that tree, and how to take care of an orchard and how to market the fruit, and how to get the dollars out.

If the gentleman is in the room now, there was one question that I would like to ask. I do not intend to give an opinion—it is one we had upon the cars coming down, and it is this: Suppose now that we have a section here that we know will produce a certain kind of fruit in perfection, and we want to plant, say, five hundred or a thousand acres,—there are four or five of us. Shall each one manage his own farm, plant it, and look after it as an individual, and then associate together and sell that fruit, or would it be more profitable to form a company of all the farmers and throw all the farms together and have one superintendent for the whole thing? If the gentleman is in the room I hope he will give us his opinion on that subject to-morrow.

Mr. President: I thank you very much.

Mr. Emmor Roberts: I would like to ask the gentleman one question. He spoke of the Rambo. I remember seventy years ago, large trees of the Rambo, full of fine apples, growing in my father's orchard, lots of them; they were good to eat in the autumn, excellent; they were good to eat in the winter, and there was nothing better. But they have all disappeared. They are not raised here at all. I do not believe there are any trees in this part of the country. Do they do as well for you at Harrisburg as they did seventy years ago?

Mr. Hiester: I cannot recall how they did seventy years ago from my own personal experience; but the Rambo that I had reference to is a different Rambo. It is the large Summer Rambo. I should say no; that little Winter Rambo, that comes in November and December, does not do for us any better than it does for you.

Mr. Emmor Roberts: It is extinct here.

President Roberts: The subject is open for discussion. Would Mr. Repp like to answer that question right now?

Mr. Repp. I think I did not understand it.

President Roberts: Will Mr. Hiester just repeat the question?

Mr. Hiester: The question was, where several men owned farms

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near by and were going to plant each a large orchard, is it better to have a number of men each to plant, say a hundred acres, or had they better form a company and plant a thousand acres, and have one superintendent? I do not ask for an answer to that this afternoon, because I do not want to start your subject before you come on.

Mr. Repp: If they were so situated that they raised their crop for the European markets it would be best for a corporation; but where they planted for our big markets, it would be best individually.

President Roberts: The Repps have answered that for us; there was the father and several sons. One son was at home helping raise the fruit, another son was in the cold storage helping there, and the other son was down at the market selling them. And that is the secret of their success. I think they answer your question that way. Are there any further questions?

Mr. Fraser: Are your Dwarf pears doing just as well as ever? I saw them five years ago, and I wonder whether they are doing as well now?

Mr. Hiester: Dwarf pears?

Mr. Fraser: Yes. Your subject is apples. I do not know whether I may ask that question.

Mr. Hiester: I have Dwarf pears thirty years old, the trees are perfectly healthy, and only about 12 to 14 feet high. They seem to be still growing and doing well.

Prof. Craig: There was a question in reference to the Pennsylvania experience with the Dwarf, but I understood it was mentioned as a dwarf apple experiment, that was mentioned by Prof. Bailey when he addressed this Society some time ago, and I am sure that he mentioned it or referred to it as an experiment, not as a recommendation. He was getting a good deal of interesting information out of it, but as a commercial enterprise he did not recommend it I am sure. So far on the clay soil in which those trees are planted, and they are planted on Paradise stock, not Ducien stock mentioned by Mr. Fraser, the trees have not come into bearing so very much earlier than similar varieties in the ordinary way of apple stocks, and thus far, after nine years' experience with apples of the Paradise stock, I do think, —I am quoting my own opinion, I do think he would not be likely to advise it as a method of getting apples into bearing quickly. In New York State the experiment station has three large

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orchards in different parts of the State trying to answer this question which is now more pressing among growers than ever, whether we shall use dwarf stocks.

Mr. Fraser: That is not quite in keeping with the English experience with that Paradise stock at all. If you take the Paradise stock in Kent where they have it so extensively, it is bearing earlier than the French graft. That is what I understood from a man over there.

Prof. Craig: That is its reputation, yes. But, I say, our experience, on the hard clay soil along Cayuga Lake, where this orchard is situated, is that the trees have not come into bearing so very much earlier if at all earlier than the standards of the same varieties.

Mr. Kerr: In regard to early apples not bearing shipment to distant markets. We ship early apples to great distances and very well. The Fourth of July and the Early Ripe are shipped as far west as Minneapolis and St. Paul and Chicago, and into Canada and the New England market, and for four years, I think, the government shipped them from our place to London and into Scotland, with splendid results,—they carried through in fine shape. The market for early apples is very much enlarged through careful packing and the introduction of the refrigerator car service. Our section has been sending out during the latter week of June and the month of July, every day three to five cars a day to distant markets, and that is only the beginning of the early apples in Delaware.

President Roberts: I want to call the gentleman's attention to the fact that it was not a Jerseyman who said anything against the early apples in South Jersey. South Jersey is the right place for early apples.

Mr. Fraser: I would like to ask Mr. Hiester again whether he has any experience with the Western stock and French crabs, which some are advising? Whether he has any light to throw on that? Which of the two would he prefer?

Mr. Hiester: No, I have not. I have not planted any apple trees for fifteen years. My main orchard is thirty-five years old. I planted them a good while ago, and have been growing them since, and I am too lazy now to plant new ones.

Prof. Craig: I notice that we have here a gentleman who can perhaps give us some information on this subject, perhaps inter-

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esting information. I suppose Mr. Orlando Harrison can tell us about the French as compared with the American stock.

President Roberts: We would be pleased to hear from Mr. Harrison.

Mr. Harrison: What is the question?

Mr. Fraser: A comparison of the French stock against the Western Green stock, for business purposes; the commercial difference between the two?

Mr. Harrison: I should say there is. My experience is that the imported seedlings are far superior, that is, we find them so during the past season, taking the trees grown from French stock, imported seedlings, we found they were much freer from insects that would affect the root in various ways than those that are grown on American seedlings. Ours are much less affected with aphias or with crown gaul. We have noticed that not only the past season, but the past three or four seasons, and we now prefer to get the French seedlings, as we think they are far preferable to the American seedling. Some nurserymen tell you, especially the Western men, west of the Mississippi River, that their experience has not been just as ours. That they have had just as good results from American grown seedlings as they had from French seedlings. Our experience is that we would get double from the French seedlings when budded, compared with the American grown seedlings, grown in the ordinary way. Possibly if we would get the genuine Crab seed here and propogate it the same way as over there, I do not know any reason why it should not be the same. We do not, however, with the ordinary method of growing seedlings from the seed that are sold here. Their seedlings seem to be better matured, and we get a much greater per cent. of first grade trees from them when budded, than we do from the American seedling.

President Roberts: Are there any further questions, or is there any further discussion of this subject?

Mr. Reid: Mr. Hiester was speaking a while ago of top working his trees on varieties like the Northern Spy and the Ben Davis. Would he hesitate, if he had late varieties like those mentioned a while ago, working that kind of stock? In other words, does he think that working with a late variety would affect the strain of the earlier varieties?

Mr. Hiester: That question has been discussed a good many times in my presence, and the opinions seem to be just about

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evenly divided. A number of men say the stock does have some little influence on the graft, and I think that the preponderance of evidence is against it. It certainly does have some little effect on the shape of the fruit and on the quality of the fruit. I do not see why it would not have it on the earliness of the fruit, too. But I cannot answer that question from my own experience, because I do not know. Most nurserymen are positive in the assertion that stock has no effect on the graft.

Mr. Emmor Roberts: There was one point spoken of here this afternoon that interested me, about the Mother apple. We heard of the Mother apple being an excellent apple, and the nurserymen had some trees to sell. I saw some of those and I bought a Mother apple just to try it. It was a custom I had in my younger life, just to see them. They did not grow worth a cent. But I budded from it on top of a thrifty Greening tree,—had two or three twigs from the Mother apple placed on top of a thrifty Greening Tree,—and, although they gave me a few very nice apples after some twenty or twenty-five years of trouble, my son wiped the whole thing out.

Mr. Hiester: That only shows what I said. We must take an apple suited to our place. The Mother apple on my farm bears as profusely as the Kieffer pears. It is a fine smooth apple, but it is a small tree and hard to get started, but a perfectly healthy, vigorous tree if you do get it started, and it bears, as I say, just like the Kieffer pear, just one mass of apples on the other, and as smooth as can be.

Prof. Craig: I think the suggestions which Mr. Hiester has made are excellent in regard to the use of vigorous, hardy stocks, but I should not like to have them accepted in whole. I have no special kick coming on the Ben Davis, although I have not any special love for it, neither the tree nor the fruit. But I make this explanation not on account of my attitude towards the variety, but I do not believe that the Ben Davis is good stock. I do not believe it is good stock for such purposes as you want in this locality. Ben Davis is a ready grower at first, but so far as my observation has gone, it will not make one of those vigorous spreading trees such as we get out of Greening or several other varieties, and I think the ordinary variety worked on the Ben Davis would likely outgrow it, and you will not have a good union. I should not like to see other varieties used in that way, although I might like to see the Ben Davis used in that way, for

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we might get rid of the Ben Davis. But I think from that standpoint, it is not a good use to make of it. One other thing. I do not like to hear that word "pedigree" used in that connection. It is not pedigree. Pedigree means a geneology, it means a family tree, it means a record running back two or three generations, and, when we simply take a scion from one tree which is a little better, as far as we can see, than another, we are simply employing a selection to multiply that kind and we are not breeding it, and pedigree suggests breeding and should be used in that connection only.

Mr. Hiester: How would you designate that?

Prof. Craig: I would simply say it was a selection,—it was a selected top,—a selection of that certain variety. It is certainly a variation and ought to be designated in some way, and if we select a certain top, it is a selection of that variety.

Mr. C. B. Crane: I would like to make a remark in regard to the influence of stock on the graft. I had a little experience some years ago. I brought some sweet apple graft from Ohio, and they were so sweet I did not like them. I grafted them for a few years with Fall Pippin or Van Duyne, and when they came to bear they were not Van Duyne. It was not much more satisfactory than the others, and I thought the stock had very clearly an influence on the graft, to a large extent, so far as to make it very unsatisfactory.

Mr. John S. Collins: In reference to the plan of taking buds or grafts for propagation from some special tree in an orchard, with a view of a permanent improvement in a variety in my opinion cannot be depended upon. The superior appearance or quality of the fruit from a special tree in an orchard may most likely be caused from environment, some special location or constituent of the soil or treatment of that particular tree. I recently read in a Horticultural periodical of a person having an apple tree of McIntosh Red that produced fruit of a superior appearance and quality for that variety. Buds or scions were taken from that tree and propagated on another apple tree, with the result that the fruit grown on the last named tree was not at all superior in quality or appearance to ordinary McIntosh Apples.

Mr. Hiester: But suppose you take a tree your father had known for fifty years and you had known for twenty or thirty years, and always produced the same fruit, every limb of it all that time, and you have a superior thing from which to grow fruit. We notice it, we believe it. I have an idea that the whole tree was formed by using a cutting from one of those superior trees that was a little

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bit better, and propogating that superior quality. And if I can propogate that old tree that I have known for years and years, I believe it will pay, and I have found in my practice that it will pay. But I do not believe it will make much difference which you take, from trees six or eight years old, because a little difference in the ground would make a difference in the root; but where the tree has grown for a long period of years, and shown that fine beautiful fruit and health, it is right to infer that there is something there that we can follow and multiply, and if we can multiply that tree, there is no reason why if the habits become fixed in that tree we should not make use of it.

Mr. Charles Black: Yes, if you can use it under the very same conditions the old one is under, but you must have that.

Mr. Kerr: It happens to be my good fortune to have been brought up right under the same atmosphere my friend Hiester was, and I like a person who has gained success in doing what I have done in the way of experimenting. I believed in this fine spun theory of selecting the finest tree in your orchard, and, going still a little further, taking the finest twig out of that fine tree, to get propogation, and I had in my early days some experience with a Wild Goose Plum. I had one tree that was immensely superior to all others, and was so for a number of years. I commenced to practice the new horticulture or gospel of selection, and I grew quite a number of trees from that particular tree and from selected scions on that particular tree. When it came to bearing, under the same conditions that the other trees were placed under, it was Wild Goose Plum, and nothing but Wild Goose Plum. So it was in my experience with Wine Sap apple; my friend had Wine Sap apples over in his orchard immensely superior to any other Wine Sap. I took that tree and placed it under the same orchard conditions, and it was Wine Sap, and if it had any other orchard treatment, it was Wine Sap under favorable treatment. And I cannot accept, I cannot believe that any such doctrine as the influence that would be brought about by selection is orthodox in horticulture.

Mr. Charles Black: I full endorse what friend Kerr has said. If you want to transmit the qualities of your tree you must also transmit the conditions. Do not understand me that I do not believe we ought not to take our propogating stock from perfectly healthy stock. I believe we ought to. But we cannot transmit those characteristics to a single tree unless we transmit the conditions also.

Mr. Fraser: Since the subject has been gone into, I would like

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to state that I feel rather strongly that there is something in individuals. For the last four years I have been interested in timothy at the experiment station at Ithaca. We have thirty thousand seedling timothy plants out. Every plant has thirty inches from one plant to the next. Those seeds are all checked with the variety that is grown on the university farm and the latest specimen. The seed from one plant is checked and then another row, and another row, and changed again. So we have had the same variety on plot four, and one, and ten and seven, and so on all the way down. There are ten acres of timothy there, and out of nine thousand plants, from American grown seed, one-third died the first year, that left us about six thousand. Of those six thousand plants, some yielded a half pound of hay, and they ran all the way down to 1-200 of a pound, the average being about three ounces. We took ten of the poorest and we took these three best and we planted them again to number one, and then checked opposite it, and then a poor one and another of the good ones and checked, and one of the poor ones and a good one and checked. Now, those plants are two years old, the second generation. The average yield of a hundred plants, from the figures shown is forty pounds of hay the last year. The average yield from the check hundred plants is twenty-two pounds of hay, the average yield of a hundred plants of poor ones is fourteen pounds of hay during this year. There is something, it seems to me, in the individual.

Mr. Lemuel Black: I think that is an entirely different question. We are getting on pedigree now. Just exactly as Prof. Craig has said, this is pedigree. Starting the pedigree from the seed, breeding from the seed, getting a different individual each time. But this other gentleman spoke of breeding from something that is established that we do not breed, and we cannot get the varieties over again. It is absolutely impossible. We can decrease from one thing that we have established from the seed, and then take a further step down again and keep going down the scale, we will have absolutely nothing. I think it is unfair to bring this argument in against the other. In regard to the question of apples. I had a little experience myself. I am not very old, but I had this experience. We had somewhere on the place some very fine apples, a Sweet Bough. The trees were vigorous, the fruit was ideal, the shape and quality were so good they did not compare with any other apples. We endeavored to perpetuate that, and had something of this theory in our minds too, but we found it all failed. Just like Mr. Kerr has found and like every-

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one who has carried it to any extent and experimented with any idea of carrying it out, not only in one instance, but in two or three. There are certain conditions that make that which we do not understand, and when that is wanting you cannot do it.

Mr. Fraser: We carried that a little further, because we took some of the plants, and took shoots from some of the good timothy plants, planted those out, and there is a case similar to the multiplication in your apple, and we found it was enough to transmit it through one shoot. We took forty plants to see if it could be transmitted, and we knew we could transmit it by propogating, and we found we could by this taking of shoots transmit those qualities, just the same as the multiplication of the apples.

Prof. Craig: May I offer just a little further evidence to that remark of Mr. Kerr? I can take him over to a county in Western New York where they grow Baldwins pretty extensively, and in one section where I think that experiment was tried at an earlier period than in any other part of the country. A Baldwin over there some sixty years old manifested its superiority over all others. About thirty years ago a keen eyed man and an open minded man saw the difference, and he propogated an orchard from that Baldwin, all on seedling stocks. He has an orchard identically the same as his mother tree, and a better orchard than can be found in that locality.

Now, I think we have got to recognize that there are degrees and degrees of variation, and that those degrees of variation may be fixed in a greater or less extent. We have got to admit the environment factor, as set forth by these gentlemen, there is no doubt of that, and we cannot always tell whether the environment has fixed the habit on that tree, or whether the tree has been in that environment long enough to have had the habit fixed, or how that difference has come about. If it is fixed, it will be transmitted. But you cannot always tell whether it is fixed. It apparently was not fixed in the case of that Wild Goose, but in this Baldwin it was fixed.

Mr. Charles Black: Have you ever seen an ideal orchard that was not treated in that way?

Prof. Craig: I have known Baldwin orchards that, as far as I know, were simply bought from nurserymen, and good orchards, not perhaps ideal, but first rate orchards. I could not answer that off hand.

Mr. Charles Black: That will come in different trees by different treatment on different grounds.

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A Delegate: I have no doubt the nurserymen are selling pedigree stock now, since they have heard of this.

Mr. Kerr: A good while ago a prominent peach grower in the State of Maryland insisted that, inasmuch as there was a variation in the ripening seasons of the crop during one season, that it was largely due to the indiscriminate use of peach seed, and mixing up the stocks indiscriminately by nurserymen. I made the statement at a meeting of the Maryland Horticultural Society, that I believed that he was wrong in his premise, that I did not believe the stock would have any influence. He made this proposition to me; he says, "If you will take and grow seedlings from Heath-Cling, and then grow seedlings from Firth's Early, and bud Firth's Early respectively on those seedlings, when they come in to bearing, your Firth's will be full cling and half clings. If it will not I will buy you a hat." Well, I told him it was buying the hat a good while in the future, but I would try it. I bought some and I made the experiment for him, and sent him two peaches separate from each class of trees, and asked him to tell me which was Heath Cling and which was from the others. I did not get the hat, for he could not tell it. But suppose there was a practicalness of real orthodox logic in this idea of variability, I appeal to you, sir, and I appeal to Prof. Craig, where in the name of common sense would the varieties of to-day be? Why, sir, you would have a perfect bedlam. It would be worse than the Tower of Babel, so far as nomenclature in horticulture was concerned. It does not seem to me, sir, that there is a particle of real sound reasoning in that proposition.

President Roberts: I will not recognize any more gentlemen on this subject. It will come up again to-morrow, and by that time Mr. Black and Mr. Kerr will be rested up. If we do not have a lively time it will be because nobody will take the other side. But the time to adjourn is coming near, and before we adjourn, it would seem proper to make a motion thanking the singers of this afternoon. That was entirely voluntary and gratuitous. It was very kind in them, and I was in hopes that they would come back. They went out of the room before I had a chance to thank them formally. I think our thanks ought to be presented by the secretary.

Prof. Craig: Mr. President, I do think no one has a better right to move that vote of thanks than I have. I had the greatest possible amount of pleasure from it. I move that a vote of thanks be presented to the singers from this society.

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This motion was carried.

President Roberts: Our secretary has in charge a great many copies of last year's reports, and if anybody did not get them they can have them by simply asking the secretary. Anybody who wants this year's report, and also future reports, by paying our secretary one dollar, he will get them. Mr. Thilow, the lecturer of to-night has an announcement to make.

Mr. Thilow: I wish to say, just in a word or two, that you will look at the program, as the subject is entitled for this evening, a good many of you fruit growers might go away and not return. While this subject is horticulture all the way through absolutely, it is not all together on home flower growing, but it is on the home improved by means of horticulture, and it interests every man, woman and child, and, for fear that you might not return, I simply want to impress on your minds that if there is any way at all possible, I will try to interest you for an hour to-night by word and by picture. I believe you will be interested. I merely make this appeal to you so that you do not be misled by the subject as it is recorded on the program, "Home Flower Growing." It is a matter of the improvement of the home by horticulture, the improvement of the town by horticulture, and I believe we are all interested in our home and town, aside from others.

President Roberts: Dr. Ward has the floor for a minute.

Dr. Ward: I do not want to anticipate what I am going to say to-morrow, but last year it was my privilege, by the courtesy of the Executive Committee, who sent me to Hartford, to attend the annual meeting of the Connecticut Pomological Society, and I will say right here to you, they will beat us all to pieces. We are not in it with the Connecticut Pomological Society. During that two days' session, they had ushers constantly passing up and down soliciting visitors to become members of that society, and it was astonishing the number that were in that audience who joined the Connecticut Pomological Society, a society similar to ours. We come here, we sit down and take it all in, but we do not take a dollar's worth in. We go away, and sometimes, out of the courtesy of the society we will send a copy of our transactions, which is against the rules of the society. Now, by paying one dollar, you can become a member, and take in all that comes from the society.

Mr. Skillman: You might explain that it does not mean a dollar a year.

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Dr. Ward: No, it does not mean a dollar a year. But, if it is worth anything to any horticulturist in the State of New Jersey, it is worth a dollar. In that way, each year, whether you are here or not, the proceedings, through the kindness of the secretary, are sent to you.

President Roberts: Is there any further announcement to make before we adjourn?

Mr. Skillman: I might say, some time ago, I picked up a newspaper, and I read that Dr. Ward had had some great experience in the past year, not only in growing strawberries, but also with rabbits and cats. He has been very successful with strawberries, and I was glad to learn, also with cats, and I suggest that he give us what information he has on that subject.

President Roberts: Will he do that to-night, or to-morrow?

Mr. Skillman: He might give it to us to-morrow, if he has no objection.

Dr. Ward: It may be that that requires a little explanation.

Mr. Skillman: Before you get through, tell us did you keep the cats?

Dr. Ward: I am coming to it, now, you will get it all, but you are getting at the end of the story before I get through. I have seen it, I have had scores and scores of papers sent me from all over the State, with an account of the cats. I picked up a New York paper, I picked up the Herald, I picked up the World, and there was an account of Dr. Ward's cats. Three months ago, I was out attending a meeting of our Essex County Board of Agriculture, and, during the discussion, in the afternoon, the question came up by one of our members, "What are we going to do in order to keep the gunners off our places, they are running all over?" And they said that the farmers had no redress. If you keep your dog, as every farmer does who grows fruits, the game warden comes,—they are running, and you are fined twenty dollars. And they thought we ought to have a committee appointed to come down to the legislature and solicit help from the legislature to have the game laws amended in some way. I laughed at that, and said, "If you had as much experience going to the legislature, as I have had, you would not do it, especially when you are up against the sportsmen of Pennsylvania and New York. It will require a good deal of pull and a good deal of experience to have any redress in your laws." And then I turned to one of those farmers that were there, a good friend of mine, and said, "Why don't you do as I did?" I said, "I found that

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the rabbits were hurting my trees, and, in going over the game laws, I saw that there was no law against keeping cats, and I got two or three cats, and every now and then, I would see that they would bring in a rabbit, and those two or three cats kept on breeding until I have now perhaps nine or ten. And since I have had my cats, there have been no trees girdled, and I find that there are no new strawberry sprouts clipped off, and I can have my spinach in the Spring, without having that all nibbled away." And, I said, "Do that and you will not have any trouble with the game wardens." I was half in fun when I told the story, but it was reported in one of the papers, and that was copied and changed, and that was copied again and changed, until the last story I picked up was very much exaggerated, stating that I was overrun with cats and would have to find something to get rid of them.

FIRST DAY—EVENING SESSION.

President Roebrts: We will take up the question box.

Question:—Will it do to let a Bartlett pear orchard, badly blighted, remain until green wood starts in the spring, so that trimming can be done properly, and then spray with Scalecide?

Mr. Lester Collins: My experience with Scalecide has been that if left too late and the buds start, it will burn the buds to a certain extent, and the authorities tell us that the blight is apt to winter over and be worse in the spring. It should be cut out in the winter time so that the spores left over winter in the dead wood are cut out in the fall or winter and burned.

Mr. Charles Black: If not too badly blighted, it should be cut back before the growth starts. It is very easy to distinguish the live from the dead wood. It would be too late to spray after the bud starts, and would not do good to the trees. But if the body is badly blighted, the best thing would be to dig it out. You can cut it out when there is occasionally a little through the tree, but when the trunk gets badly blighted, the tree is no good. That is so with a tree over three or four years old. Sometimes a new tree that is a little blighted will renew itself.

Mr. Bancroft: Mr. President, there are two kinds, viz.: dead blight, and hold-over blight. Our experiment station men tell us we have nothing to fear from the dead blight, which is the

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blight that shows a decided ring, or a decided mark between the dead and the new wood. It can be cut off very close, or even if it is left, they claim we have nothing to fear from it. The hold-over blight, where there is no decided ring, is very dangerous, and it ought to come out before any action takes place in the spring, and it ought to come out far enough back on the healthy wood to get entirely rid of the blight which is working ahead of the dead portion, and that can be detected by little brown sprigs through the wood. It will often run twelve to fifteen inches. If possible, I always cut out hold-over blight at least eighteen inches in the wood. Dead blight is not so bad. But I think in the winter is the better time to cut out the blight.

President Roberts: Does not that, which you call dead blight, often skin off, and come off the wood?

Mr. Bancroft: No, that is hold-over blight. Dead blight is absolutely dead up to a certain portion of the tree and it is shrivelled down to that point. The healthy wood has kept on growing, and it will make a decided ring, and the healthy wood will be larger than the dead wood. There is no danger in getting very close to it, that blight is dead. But, just as soon as you get what is called hold-over blight, where the mark of demarcation is not well defined, there it is liable to run fifteen or eighteen inches in the healthy wood, and that should be cut out before any action takes place in the tree in the spring. We have followed that plan for a number of years and we have found that it worked fairly well on the trees.

Mr. Fraser: May I ask whether Mr. Bancroft has disinfected his saw?

Mr. Bancroft: If I find I cut in to the affected parts where they showed those brown sprigs at all, I have always disinfected the saw.

Mr. Barton: Is the apple blight which has been some trouble this last year, a very close connection to the pear blight?

Mr. Bancroft: The apple blight this year has been very serious with us on some varieties, but we do not know to what extent it is going to injure us. While we have had it for a number of years, some years it would strike only one or two varieties, the next year those varieties would escape the blight entirely, but it is a little worse this year on some varieties. So far we have little fear of it.

President Roberts: You think it will work out all right?

Mr. Bancroft: I think so. We have never had any serious trouble from it. We have had it on a couple of very young trees, but by

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digging it out carefully they seem to make nice root without showing further signs of blight.

President Roberts: It shows badly on the Smith's Cider.

Mr. Bancroft: We do not have the Smith's Cider.

President Roberts: You only raise good apples down there.

Mr. Bancroft: We try to. We try to be nice good people down there, and we always give good value for what is received.

Mr. Fraser: Mr. Westerly of Ithaca secured a perfect propogation of the apple blight on a pear tree, and tells us it is the same thing.

President Roberts: It does not seem to be so effective.

Mr. Fraser: No. It is the same thing though.

Mr. Charles Black: It does not work the same on the apples. It scarcely ever attacks the main branches, as in our section it is just on the twig. The blight some times extends pretty well down, but I never saw it strike the trunk of an apple tree.

Mr. Fraser: They got the same germ, the same bacteria as the other.

Mr. Charles Black: But it does not go so far down, nor do the damage.

Mr. Barton: The reason I asked that question was that Prof. Close was in our orchard last year, and he gave me to understand, if I understood him rightly, that it was the same thing. As for not extending down the trunk, as Mr. Black says, I think you will find it often down to the bottom of the tree, and I am sorry to say that I am a little inclined to believe that it does.

Mr. Fraser: Prof. Westerly of Ithaca last year put out a bulletin on that. I was much interested. I know the orchard too that he made the test on. He secured a perfect culture and a perfect inoculation of those which he took from a pear tree and inoculated in an apple tree.

Mr. Barton: Somebody advocated dipping the shears in carbolic acid.

Mr. Fraser: We did this year, in all our pruning. I gave the men some carbolic solution to use while they were pruning, indiscriminately.

Question: Is it legal to operate a traction engine on the public highway?

Mr. Franklin Dye: They do it, Mr. President. Custom is law.

Mr. John S. Collins: They are not half as bad as automobiles which have the right to operate on the public roads. An engine

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ought to have the right to go along the street, and it would not kick up half as much dust as an automobile.

Mr. Lester Lovett: I put that question in, and it is of great importance to us to find it out. We have been making strenuous efforts to find out whether it is legal to operate a traction engine on the public highway, and we cannot do it. We have asked my father's attorney what he thought about it. He said he could not find that it was illegal, and I have been warned by one party who ought to know, that it is illegal. It is claimed that near Freehold some of the growers of beans for canning purposes tried to operate a traction engine in that neighborhood to bring their beans from the field to the factory, and they found it was not legal, although I do not know why it should not be legal. The only thing is it would frighten horses. But there seems to be a general impression that it is not legal, otherwise they would be operated more than they are.

President Roberts: That question has come up in Camden County and they have compromised in this way. A traction engine has the right to run on the road, but if it undertakes to haul a number of wagons, six or eight, or too heavy a load, and tears up the road, the owner of the engine is notified that he will be held responsible for all the damage to that road. They checked him that way. That is in the town of Haddonfield.

Mr. Lester Lovett: According to that, then, it would be legal, provided the man operating the traction engine would be responsible for any damage he did to that road?

President Roberts: That is the way they get around it there.

Mr. Lester Lovett: Where is that place?

President Roberts: At Haddonfield, Camden County.

Mr. Logan: Is it any worse than a steam roller?

President Roberts: Oh, yes. You see they haul wood and bring very heavy loads on those trucks, putting six trucks one after the other, and it goes right through any stone road and tears it up.

Mr. Logan: We propose to haul cracked stone with it in our county.

President Roberts: They put a stop to it in that way. They served notice on the owner that hereafter he would be held liable for all damage on that road. If the traction engine goes, the heavy load behind it does not go.

Mr. Logan: We have automobiles that carry five tons.

President Roberts: The traction engine itself weighs that. But

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they put thirty tons behind the traction engine. The engine itself weighs five tons, but it does not seem to do the mischief the other does; it is that big weight coming behind that does the damage. That is what they object to.

Mr. Dye: May I ask a question?

President Roberts: Yes, we are always glad to hear from Mr. Dye.

Mr. Dye: A letter was sent some time ago to Gov. Stokes, from Atlantic City, suggesting that there is a great field for profit as well as reputation in cultivating the huckleberry and also our native persimmon. The Governor thought there might be something in it and had the letter published in the Trenton papers and then sent it up to my office. I would like to ask if any of the members here have tried the cultivation of our native huckleberries, and with what result, and whether they think they could propogate the persimmon and get it on the market so that it would be fit to eat before the frost gets it?

President Roberts: The frost helps them. They are better after the frost.

Mr. Dye: I know it. That is the trouble. They have to be frost bitten to make them edible.

Mr. Charles Black: I have never heard of any attempt to cultivate the huckleberry, but I have often thought there was no reason why we should not make just the same progress with them as we have with very many other fruits, strawberries, for instance. That started from a little small, wild berry with no size at all, and by proper selection, seed, and proper soil, I do not see why we could not cultivate and improve the huckleberry as well as any fruit sold. I have never heard of any attempt to do it.

President Roberts: Are there any further questions you wish to ask? We will have the question box again the first thing to-morrow morning. If any of you think of any questions over night, or have unpleasant dreams, you might just as well bring them in in the morning, and we will take them up the first thing. The next on the programme is an illustrated lecture on "Home Flower Growing," by J. O. Thilow, Secretary of the Dreer Company, Philadelphia, Pa.

Mr. Thilow: I am glad, my friends, to direct your attention to that old, time honored institution, of art horticulture. These men have been wrangling this afternoon and have been for years past, and will, perhaps, for ages to come, in reference to nomenclature, varieties, hybreds, seedlings, graft stocks, etc., of that fruit whose

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luscious qualities tempted man at the birth of this world, and, I dare say, if Mr. McKay had been present at that time with his cold storage system, we would have that apple, the Maiden's Blush, we might term it, on exhibition on the table before us, with the rest of the fruit. So we are not talking about a new thing. We are talking about a very, very old thing, yea, the oldest in the world. I am about to illustrate by word and picture an art, which I hope the boys and girls of to-day will interest themselves so much with on the morrow and years to come, that we will have our humble homes and cottages beautified with growth of vines and flowers, and that we will beautify the homes and towns and cities in the interest of the American Civic Association. We want to endeavor to improve and emulate this idea as far as possible and get all our little towns to do the same. We do not want to forget that when the bill poster comes along and destroys the magnificent trees we have along our avenues by pasting them up with bills and along the fences, destroying the natural condition and beauty, and the rural aspect of our towns.

Home and Town Improvement.

Illustrated lecture by J. Otto Thilow, Secretary of Henry A. Dreer, Inc., Philadelphia, Pa. Illustrations through courtesy of Ladies' Home Journal.

Horticulture, that most ancient of arts, with its great possibilities and resources, offers so much with so many opportunities for employment of mind and hands of those who have the inclination to interest themselves in its varied realm. One cannot travel through England, France or Germany, without noticing the interest taken in horticulture. Men and women in the homes of city and country, regard the most humble domicile incomplete and an unfit harbor for themselves and families without plants, flowers and shrubbery under their own personal care. This inborn love for the adornment of the home has been handed down in posterity, so it has become a part of the nature of children to busy themselves with the care of plants. This taste has so spread throughout these countries, that the American tourist returns somewhat sorrowing to find this interest so sadly lacking at home. They laud the subject enthusiastically and wonder why we are not abreast with the foreigner in this one thing; the reasons are obvious. We educate hurriedly, assigning our boys and girls to studies which appear to tend to early and lucrative occupa-

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The home of Mrs. Clara B. Thompson, Warren, Ind., as it appeared May 1st.

As it appeared Aug. 12th, a change wrought for 45 cents, including wire netting and flower seeds.

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tion, sending them as soon as is thought reasonable to commercial and industrial schools where they can be fitted for occupation in business. Were it not for the absolute need of bodily recreation and development, the athletic sports and outdoor exercises would be overlooked. The attention of children is rarely if ever directed to botanical studies except when preparing to become teachers in horticulture. The homes do not offer the inducements nor even the attraction. The pretentious homes of city and country have their surroundings laid out with an eye to economy, permitting only the indispensable lawn to exist, surrounding the grounds with a fence, coping or wall, and laying the walks with cement, thus avoiding the little attention which a few plants, vines and shrubs might demand, and leaving the cultivation of plants to those who are commercially interested.

The children that are brought up in affluence are less liable to be directed to the pursuit of horticulture for pleasure than are those of the humble homes. This being the case, an active interest has been stimulated in several parts of our country among ardent horticulturists to establish School Gardens. Here boys and girls are actively engaged during the vacation months in growing flowers and vegetables, studying the habits and nature of the various classes of plants. There is such a pleasing response from the plants themselves and the reward for the efforts so marked, that these children do their own thinking. Because this latent love for horticulture has been awakened, the interest is started and develops with the child, and when the taste is once created it never wanes.

The subject of Home and Town Improvement is brought to your attention to show the imperative need of a greater interest in horticulture in the suburban towns, where this condition is supposed to exist.

The farmer who styles himself an agriculturist should educate his family to become horticulturists, encourage them in beautifying the farm home and the country town. There is no place so attractive as a well kept farm, but how much more attractive in appearance and enhanced in value is the farm when the home looks equally attractive, not only to the occupants, but to the passer-by as well. This interest when once practiced and nourished becomes contagious, and permeates the whole neighborhood. In order to establish discipline for the protection of trees against mutilation and being defaced by advertising posters, it is necessary to organize to prevent the invasion of telegraph and telephone hirelings who relentlessly butcher

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these specimens which have had years of attention and nourishing. And yet they style themselves professional tree pruners. These features with clean street and good road ordinance, should be under the jurisdiction of town council or township committees, and should be guarded with vigilance. The corporation of the authorities with the people is essential to bring about order and a better condition of things. We can observe in some of the pictures the striking change from barrenness to abundant growth and richness in flora, how strong the contrast, with so little effort and small outlay of money. Many of the effects can be changed from season to season. Many of the illustrations shown are the results of children's work. Those in advanced years have been too busy and have delegated this part to the children. Let them know they will have encouragement, then see what the results will be. If you travel about and find in your neighborhood some homes which are neglected, where the front and back yards are only rubbish harbors, endeavor to get some flower seeds into their hands, or send it to the children of such a home. Start the interest, if not directly, do it indirectly, the results will be good.

Some of the pictures which show the strongest contrast are the results of one season's work, and conducted entirely by children. Unattractive barren places even in small plots are changed into a wealth of bloom and growth.

The first and very important lessons taught by this bringing order out of chaos, is that rubbish does not accumulate, it finds no lodgment, and places which were objectionable have become attractive. In manufacturing towns the operators give encouragement to their people by assisting them, and also beautifying the grounds about the mills. The railroad companies are spending vast sums of money for horticultural improvements about the stations and along the whole line where the conditions will permit, a separate department exists known as the landscape department.

This work was first done at Newark, Delaware, by the station agent who afterward entered into the florist business. Gas companies are making their huge, unsightly tanks more attractive by the improved grounds surrounding them, and so all through the industrial world, the horticultural taste is growing, because it brings good returns and affords much pleasure. The expositions of this and foreign countries give more attention, and spend more money in landscape and preliminary work than in interior finish of the buildings. The artistic horticultural effect while not only attrac-

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The Mountain-side home of Mrs. C. W. Keister, W. Va.

For the expense of 65 cents in flower seeds, this mountain-side home in the coal fields of W. Va. was made attractive.

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tive, makes an impression and adds beauty to the exterior and to the buildings.

The American Civic Association is doing effective work in our country by encouraging the establishment of small parks in our large cities, as they not only add beauty to the surroundings, but are the wholesome breathing and recreation spots for the people who are hemmed in day and night by brick walls and amid the tiring sound of car and vehicle. They are also making vigilant protests against the disfiguring of the highways in both city and country with superfluous bill posting on trees, walls and fences, and even on the corner buildings with unattractive and rarely modest pictures. Vigilance against the pollution of natural streams and waterways, and the useless destruction of trees is commendable, and in which all should unite. We will learn sooner or later that the call must be responded to, and if those in middle or advanced life cannot be awakened to become interested in the all important matter of order, cleanliness and beauty surrounding our homes, let us encourage the children to pursue it. They will not neglect a care placed to their keeping or leave unfinished the work so fascinating. Our boys and girls are capable in aiding in the promotion of the higher education in horticulture. Their taste and love for nature become intense if begun in early life. Let all fall into line; proper application engenders a taste, and the first attempt brings quick results.

The school room can be in part a laboratory, showing how nature works. The classical schools of to-day are resorting to practical demonstrations in nature's study. Showing the bark, leaf and seed of the tree in the school room does not satisfy the inquiring mind of the aggressive scholar, they must be conducted to the field or forest and shown the natural flower, the tree as it grows and appears. These impressions are not only interesting but lasting. Practical illustrations create interest. Let the children apply their skill and aided by nature they will soon learn to protect natural conditions from the destruction of the fast growing population, who in greater part have had no time to learn about exterior home adornment, and have not had the matter brought to their attention. The taste should be implanted now, the influence will spread widely throughout communities, and the condition of the future will be such as we are now striving hard to establish.

The school gardens in which great interest is being taken, should

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have every encouragement and financial help. In our country's capital, Washington, D. C., the agricultural department has been lending help in the way of seed donations for the use of the school garden work exclusively.

The work is assuming such proportion, that the commissoiners presented a bill for an appropriation of $1,000 for the purchase of seeds and other materials for the prosecution of school garden work; this was a modest request, and for so good a purpose, and yet the House and Sub-Committee cut it out and thus left the enterprise where it has been since the beginning, on a basis of the contributions of pupils, teachers and citizens. There is no more worthy undertaking now in view than this. Education along this line did not strike our Representatives as being of any personal benefit as in free seed distribution for which an appropriation of over a half million dollars is made without almost a dissenting vote. The school garden work has done great good already not alone in improving the appearance of the city, but also in inculcating in the children a love for the beautiful and a keener appreciation of the right of others. The little school gardeners have become home gardeners as well, and every child who has a few plants in the back or front yard has acquired a new sense of responsibility for the maintenance of an artisic standard.

Thus far the school garden work has been carried on by dint of the hardest kind of work by a few teachers who have shown the way and secured the funds. It will be hard to find a purpose upon which $1,000 can be spent to such good effect as in the encouragement of love for plants and flowers on the part of the school children of Washington.

Outside of the City of New York a school is being started which is to reclaim city waifs by transplanting them from the vitiating atmosphere of the city streets into a farm school. In Warwick, England, such a home has been started and it has succeeded well, drawing its pupils from the worst sections of London.

Mr. Arthur Ritchie: Mr. President, I think most of us need to put in practice some of the truths we have just heard in regard to our tenant houses. I know in Burlington County most of the farm houses are moderately respectable looking, but a great many of the tenant houses are as bleak and barren and desolate as many of the pictures we have seen to-night, and I hope we will all take home an inspiration gained from these views and try to improve the appear-

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The South Dakota Prairie home of Mrs. R. McWaghton at Aberdeen.

Hardy vines and creepers have made this prairie home a bower of blossom and foliage.

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ance of some of our tenant houses. I think it will help increase the services of the men we put in those houses.

President Roberts: That is a very good suggestion. Are there any further remarks with reference to this subject? It is a most interesting subject. Brother Dye, you go all over the State; what can you tell us on this?

Mr. Franklin Dye: The matter presented to us to-night has been on my mind for a long time, and I have been revolving it there for several years, how to bring this matter before our people in an effective way, so as to start an improvement in this direction. The suggestion made on my right, is a good one, so far as it applies to tenant houses. I think many of the farm houses around Moorestown, and other parts of Burlington County, have a very attractive, homelike look. But we know that there are very many farm houses that are not attractive, and we know that the front yard and near by the side door at least, is generally a lumber pile, perhaps a hog pen, and farmers' tools piled up under the tree. Those things are out of place. We have had this question up in some of our Institutes in years gone by,—the matter of improving the home for the sake of those who dwell there constantly, that is, the good wife and children who are coming on. It is of the utmost importance, Mr. President. We cannot over-estimate the importance of the constant impression that is going into the minds through the eye in the every day life. It will be of a refining nature. It will help them to aspire to things higher and better and more useful, or it will leave them in that passive condition with those repulsive things around them at the home. I have been thinking while the speaker was talking, how could we inaugurate a movement in this direction in New Jersey to create a stimulus among the young people in the home, the boys and the girls. Our State Board of Education have started a plan in this direction. We hope something will come out of it.

Mr. President, I shall hope, in the near future, with perhaps the co-operation of this Society and that of our County Superintendents at least, to bring about some plan whereby the boys and girls of our farm homes may be stimulated to try this very thing that has been brought before us to-night, possibly a reward might be given them, and views of what they are doing, later on be presented in our institutes, and at our future meetings.

I think we can do something. I think we ought to do something. New Jersey is in the lead in road improvement, we want to be in the lead in town improvement, and country home improvement. I

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did wish, as the speaker was going on, that we might have that spirit of improvement in the street where I live. Without the co-operation of the common council and the city fathers, there is no encouragement to the citizen on the common streets to try to improve and keep his streets in order, but, if we had back of us the common council to take hold of this thing and encourage cleanliness in the street and the yard it would be a grand step in advance, and I hope it will come to pass. Why should we not try to make our homes, while we are here, as much as possible like the better home to which we hope to go ultimately? I think we ought to try it. I am very much pleased with this address and very glad to have heard it.

Mr. Goble: I know of no one in a better position to distribute this information and call attetion to it than Brother Dye. He is the one who goes from Cape May to Sussex every year of his life in this work, and he can call the attention of the institutes to this very subject, and I think it is up to Brother Dye to do that, as he always does what is best for the Horticultural and Agricultural Society. There is one thing the speaker missed, that was the pruning of our trees in the highways by our telegraph, electric light and telephone people. I am sorry to say he did not show some of that expert pruning they do. It is certainly a disgrace the way they go through trees that you and I and everyone else plant for ornament and for shade. And they come along with their saws and pruning shears and broad axe and they prune them all the way from one inch to ten feet away from the limb, and they leave an odd limb here and there and spoil them. I make that suggestion for your benefit, but perhaps you have all seen it. I would like to suggest to the speaker that next time he has something of that sort.

Mr. Thilow: Mr. President, I am very glad the gentleman touched on that part of the subject. As you know, men who are interested in township committees, and borough councils, etc., are very rarely horticultural men, and it is your fault if you permit any telegraph company or any telephone company to come along and cut your trees. But, I want to say for the edification of the people of New Jersey and the horticultural people who are here and are interested in horticultural improvement and advancement, that I delivered a lecture on these lines,—an illustrated lecture with pictures of some of the Linden avenues in Germany and some of the Horse Chestnut avenues in America,—and I called their attention to a picture that followed of the same avenue that had bill posters

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A wilderness. The home of Mrs. G. E. Conn, Seattle, Washington.

A change wrought by Mrs. G. E. Conn and her 13-year-old boy. In 1904 this garden sold fruits, flowers and vegetables to the amount of $40.89

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on nearly every tree. Looking down the street, you could see how a magnificent avenue of trees had been disfigured by those bill poster cards, destroying the appearance of the whole street. There were also newspapers flying along in the street. One week from the time I delivered that lecture, I was surprised to find that the town council had passed an ordinance that no bill should be tacked on trees, and other measures were taken to beautify the streets. So that, if I have done nothing else in all my life but deliver one lecture and cause that advancement in cleanliness and order, my work would have been well paid.

Mr. Goble: On that I agree with you, but when it comes to these other fellows, you cannot put them back in one hour or one year, nor ten years in the work they do. I certainly agree with you, but how many people are there residing in a city who know what their rights are, or who have any inclination or courage to fight these people to a finish? In my own town the Township Committee passed a resolution that they should first obtain the consent of the property owners to touch any tree within that town. What did the company do? They came there and cut the trees without asking aye, yes or no. Did the town council go to work and enforce that ordinance? They never raised a finger. That is the chief trouble in my home, and I do not suppose there is very much difference whether it is in the northern, or the southern, or the central part of the State.

President Roberts: What action will you take on this very interesting address?

On motion the address was referred to the Executive Committee.

President Roberts: The next matter on the program is a lecture on "Cold Storage," by George H. McKay, Superintendent of the Reading Terminal Market, Philadelphia, Pa.

Cold Storage.

GEORGE H. MCKAY, Superintendent of the Reading Terminal Market, Philadelphia, Pa.

After listening to the talk and seeing the views of the last speaker, in which I became greatly interested, it seems to me that cold storage is rather a cold subject to attempt to talk to you about, for the simple reason that the cold storage man usually

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keeps his secrets to himself; but Mr. Skillman is responsible for my presence here, and if I say anything or do anything that does not please you, you can take it out of him.

I have the pleasure to represent a cold storage and market. The market is one of, if not the, largest market in the world, and is in the City of Philadelphia. It covers nearly two acres of floor space. In our cold storage we cool nearly four hundred and fifty thousand cubic feet of space, to almost any degree of temperature that is required to keep the food products and different goods which are stored therein. And it is strictly in the sense that it is a farmer's market, that we cater to the farmers and the fruit growers. We cater to the farmers and the fruit growers, from the fact that without them no market can exist or become successful in its operation.

Thousands of men and women come to our market. On Saturdays we have counted sixty thousand people coming in during the fourteen or sixteen hours which our market was open. Those people come to buy, and most of them would not come there if it were not for the farmers who occupy our stalls in the market.

I have been connected,—you may think I am a very young man,—but I have been connected with fruit storage and market business for about thirty years, and during that time I have become acquainted with fruit growers of nearly every State and Territory in the United States. At the present time we store fruit from nearly ever country where fruit is grown in the world,—as far as Japan, China and Germany.

One of the greatest problems that confronts us to-day is the food supply, and all men who have the welfare of this great nation and its people at heart, should try to solve this most important problem. I think you will all agree with me on that. With the wonderful growth of our country and cities, and the rapid increase of our population, at the rate of a million a year by immigration alone, and an equal number of births, this question of food supply is a most serious one to be considered. I tell you, my friends, there is a time coming, and it is not far away, you will live to see it, when fruit will become a luxury. The cost of living in this country and especially in the cities and the larger towns has increased to forty per cent. in the last fourteen years. The most of our large corporations and commercial business houses realizing this fact, have increased the wages of employes. I know this from actual experience, because I have some land in Jersey and the wages

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The home of Mrs. H. W. Edwards, Des Moines, Iowa, before improvement.

For $6.45 this home has been improved—new terrace, Roses and Clematis, Cannas and annual flower seeds.

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which I pay to-day are at least forty per cent. more than I paid ten or twelve years ago for the same labor.

Now, if the cost of living has increased during the last fourteen years, and the population is increasing at the rate of two millions a year, within ten years, or in 1917, we shall have a population of one hundred and twenty-three million to feed, three times a day. Do you think for a moment, with these conditions existing, that there will be a danger of overproduction of fruit?

It always gives me a great deal of pleasure to meet the fruit growers in their annual session, for I fully appreciate that the good work which you are engaged in in this generation is laying the foundation of the food supply for the years to come. Cold storage or refrigeration is one of the signs of warning that tells of the scarcity of the food supply during certain months of the year.

Refrigeration is but in its infancy, and yet in every large city of the United States there are several immense buildings which are filled with the products of the farm. At first the large warehouses were filled with products from the farm by the speculator. But, to-day, the fruit grower realizes the fact that the price realized by selling his fruit in the fall on the farm or to the commission men when the market is overstocked, is far below what he should receive for his labor and toil, and that under those conditions fruit growing is a very poor investment. You are not alone in your opinion. Seventy-five per cent., yes, ninety per cent., think as you do; and if they sell their goods at that time, they will make very little profit.

Now comes the benefit of cold storage or refrigeration to the fruit grower. Instead of selling your fruit when the market is glutted, store it in some cold storage warehouse and hold it for a few months when you can often realize fifty to two hundred per cent. profit.

In putting up your fruit for storage, there are a few conditions you must observe. Pack good fruit in a good package and if you must put in small fruit, put it on the top and bottom and the large fruit in the center. The fruit will sell better that way. A man when he buys sees the small ones on top and he buys them. Of course, he buys them with that understanding. When he comes down to the centre he finds he has better fruit; but oftentimes he finds the reverse.

Every apple or pear should be hand picked, and, if you have not thoroughly sprayed your trees, it is not worth while to put the fruit in cold storage expecting to receive the highest price for it. The

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finest fruit and the honest package is the money-maker. Spraying gives quality, as well as a fine appearance, and both are very essential. There is a chance for fruit growers here to discuss that question of fruit spraying and find if it does not give quality.

After you have stored your goods in a warehouse, and you find the market has advanced, you can visit the place and will find no difficulty in disposing of the fruit to ready purchasers.

The Kieffer pear which has been grown extensively in your State, has been abused not only by the fruit growers, but by the commission men, the cold storage people and the public in general. In the first place there was an overproduction of the fruit, and, it being a very hard fruit when first gathered from the tree, the public refused to recognize it as a desirable fruit. And, when the fruit was gathered from the tree, unless it was sold quickly, it became soft, and reached the market in a bad condition, and thousands of trees, as a consequence, have been allowed to die when the orchards have been bearing.

When the first Kieffer pear was stored, it was supposed by cold storage men, as well as the fruit grower, that it should be put in a high temperature. This was a mistake of the cold storage man as well as the grower. We found that the Kieffer pear would stand a very low temperature, a temperature, say of thirty-two, which is freezing. But in a cold storage house, we consider freezing about thirty-four, because, from the fact that there is no circulation of air, the fruit will stand a lower temperature in a cold storage room, than it will outside where there is a circulation of air. At the present time Kieffers are stored when fully grown, but firm and hard, and kept at a temperature of from thirty to thirty-two above zero, and the fruit comes out in perfect condition, and finds a ready sale at a good price.

The Kieffer pear orchard can be made to pay if the fruit is properly sprayed and handled. When the pear is ready to be placed on the market in the fall, there being an abundance of fruit, the price is very low, and it is impossible to realize enough to make pear raising profitable, while in a few months, the market price becomes higher and a good demand is made for the fruit.

In giving the data which I am going to give you, I do not suppose it is best for the gentleman to take it down, from the fact that it is so high you probably will think I am romancing. But I give it to you as I received it, and most of it comes from my own knowledge.

A grower sold one-half of his crop, some three hundred baskets,

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and received twelve cents a basket for them delivered at the depot. He hauled them about fifty miles. He stored three hundred baskets, and sold them in November for ninety-five cents a basket; for the first lot he received thirty-six dollars, and for the second lot he received two hundred and eighty-five dollars. Taking out the cold storage and the freight, he received a net profit, within two months of $274.40. That is almost as good as a Standard Oil investment.

A man bought five hundred barrels of apples from a fruit grower for $1.75 per barrel. The fruit grower furnished the barrels and hauled the goods to the depot and loaded them on the car. He received $875 for the fruit. The same fruit grower stored in our cold storage house five hundred barrels of apples from the same orchard and sold the fruit during the month of February at $5.50 a barrel. The freight and storage amounted to $150, leaving a net profit of $1,725.

From an orchard of a hundred apple trees, a fruit grower sold one year ago one thousand dollars worth of apples. The next year he stored and sold fruit from the same trees, receiving fourteen hundred dollars this year.

In reply to several inquiries as to the best package for fruit, especially apples and pears—for apples I would use the regular apple barrel, what we call the New York apple barrel, with a corrugated top and bottom. That allows you to press the fruit firmly in the barrel, and that is what you should do, so that when it is ready for the market it will not shake. If it shakes the people think some of those are small rotten apples in the centre and they refuse to buy them. But for fancy fruit, Oregon boxes are the best, being deep, allowing the fruit to pack better than in the shallow boxes. I was offered to-day in the Terminal $1.50 for a box of apples in that kind of box. They said if I had a thousand boxes they would give me $1.50 for each box, "There is a gentleman who has apples stored away like this," I said; "I will give you the name of the gentleman and you can then write him for them."

The Kieffer pear has so many enemies in the State of New Jersey that I almost blush to say anything about it. But, I assure you that if a man has an orchard of Kieffer pears to-day, and he does not make any money out of the fruit, then he should not be a fruit grower. It is his own fault, and, if he will take the trouble to come to Philadelphia, I can show him where he can, I think, make good profit out of his investment in a Kieffer pear orchard. I would recommend for the storing of Kieffer pears, the half barrel

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basket, using top matter and side liners, or the regular apple barrel with corrugated top, bottom and heads. A great many pears are received in sugar barrels and even in small baskets. Of course, it is understood, if you put your fruit away, you wish to sell it in bulk. It will sell better from a hundred baskets up to whatever you chose, and even carload lots; and if you have a commercial package it is much better for you and you will receive more money, from the fact that commission men do not like to handle an odd package.

In conclusion I wish to say to you that after twenty-five years of experience with farmers and fruit growers in handling their goods in cold storage, I believe the State of New Jersey is well located for the production of fine apples and pears, and with good transportation, a large population at her doors, access to the best markets, there is no reason why she should not increase her acreage of orchards more extensively than ever and receive good returns for her investment.

There is one thing I wish to say here. You gentlemen probably have had more experience than I have in raising fruit. I know you have, and it ill becomes me to advise you in its raising and spraying or taking care of your orchard, but, when you come to sell the fruit, I think I can give you points how to get a better check than you usually have for it. The Bartlett pear is one of those things which I believe can be made to pay properly for the fruit grower. It is the highest priced fruit in our market during the holiday season. It is a very sensitive pear, but if properly packed and kept in cold storage at a low temperature, it will bring, and they do bring this year from six to ten dollars a barrel. A great many people do think the Bartlett pear cannot be kept. A well-known nurseryman and fruit grower raised from nine hundred trees, six years old, nine thousand baskets of fruit. At ninety cents a basket he would receive eight hundred and ten dollars for them.

I believe that there never was a time when a man with a small capital could invest it more profitably than in setting out an orchard and raising small fruit in the State of New Jersey. But what you want to do, if you have a large orchard, is to become familiar with these large cold storage warehouses. You should visit them and see how the fruit is kept. Keep a record and watch the prices of the fruit during the year, and see if it is not possible for you to find a better market.

Fourteen years ago one of your fruit growers stored apples and

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pears with me, and to-day he has a cold storage warehouse, makes ice and sells coal, and furnishes water, I think for most of the railroads in New Jersey. That is one of the successful men, and, while he did not appear to make any effort, he used his own judgment, became thoroughly familiar with the market in the city, and, not only that, he took good care of his orchard.

I have a motor bicycle, an Indian bicycle,—I presume most of you know what they are if you drive a horse,—and I have an opportunity to go from two to three hundred miles in the surrounding country. I tell you honestly that to see some of the pear and apple orchards that have been neglected and abused it seems as though some of the fruit growers in this State, and in other states, should have a guardian, or else they should allow their wives to keep the orchards. I have about fifteen ladies who store fruit with us and other products of the farm, and every one of those women has made money and is successful, and I guess the husbands let them have their own way about it.

In conclusion I want to say this; I have no axe to grind. Usually in September our cold storage is full of the products of the farm. I do not cater to speculators. I merely ask a man if he wants to put something away, to put it away and keep it until the early fruit is out of the market. Then he can realize a fair profit. We have one of the most successful farmer's markets in the world in Philadelphia, and if you gentlemen want to visit our place it is open to you, and we will show you nearly all the fruit we have in there. There is no objection to it. We will try to give you any information that will benefit you, and help you to make a success of your fruit raising. I thank you very much for your attention. (Applause).

President Roberts: Are there any questions you wish to ask of Mr. McKay?

Mr. Fraser: We are growing quite a lot of fruit, would Mr. McKay advise that we cull it before we ship. Suppose we have apples that we want to hold would you advise that we put up some system at the orchard and cull it in large quantity?

Mr. McKay: Where do you live?

Mr. Fraser: In Western New York.

Mr. McKay: Where do you ship it to?

Mr. Fraser: We have been selling it on the tree, and then we let the other fellow do it.

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Mr. McKay: And shipping in carload lots?

Mr. Fraser: Yes, shipping in carload lots.

Mr. McKay: I think I should not. I think if you pick them when they are not over-ripe and sell them within three or four days, it is not necessary to cull them at all.

Mr. Fraser: This October we had twenty cars of Greenings, and it grew very hot, as it does sometimes, and I thought we could do it that way.

Mr. McKay: You could if you had the fruit in store.

Mr. Fraser: Yes, some of it.

Mr. McKay: It would be best to ice your car, and the dampness coming from the ice will improve the fruit, if they have been sold stored. Dampness will not injure them, it will rather help them, and will take up the little moisture that they lose in cold storage.

Mr. J. C. Hendrickson: I would like to ask if the fruit is re-examined when it comes out of the cold storage?

Mr. McKay: No, sir. If you put your fruit in in a proper way, that is, if you put it in and press it down hard, and it is properly kept at a temperature to which any cold storage man will keep it, I think it should not be repacked. I will tell you we never repack any fruit. When fruit becomes so that it should be repacked, we notify the man of that fact and then he usually sells it.

Mr. Hendrickson: In New York I understand that the Kieffer pear has not been successful in cold storage.

Mr. McKay: There are different kinds of cold storage houses. Some cold storage houses never keep a temperature. In Philadelphia we receive pears from New York State shipped from New York, up in the State, and stored in our warehouse and then shipped to New York and sold. Those men are New York commission men, and they say that the keeping of their fruit has been unsatisfactory in New York City, and I attribute it to the fact that in some way, either the rooms are not properly tight or the capacity of the machines is overtaxed, and they do not get the proper temperature. We try to keep a temperature between thirty and thirty-two, and in a good cold storage house the temperature should be guaranteed between two degrees. It is a variance of temperature that spoils fruit. Kieffer pears from Maryland and Delaware and New Jersey, and apples from New Jersey are really harder to keep, from the fact that it is a warmer climate, and they are never as

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hardy as New York fruit. We do not have any difficulty in keeping them if they have been properly put up.

President Roberts: What action will you take on this most interesting address?

On motion it was voted that the address be referred to the Executive Committee.

Dr. Ward: It seems to me that the thanks of this society should be extended to both of these gentlemen for their able addresses delivered here this evening. The addresses should not only be referred to the Executive Committee, but the thanks of this society should be extended to the speakers.

On motion it was voted that the thanks of the society be extended to the gentlemen for their addresses.

President Roberts: The Executive Committee will meet in this room after the rise of this meeting. We will meet again to-morrow morning at nine o'clock. The meeting now stands adjourned until then.

SECOND DAY—MORNING SESSION.

JANUARY 4TH, 1907.

Question: What is the best means to eradicate the curculio?

President Roberts: Mr. Baird will tell us about that. How shall we eradicate the curculio?

Mr. Baird: I give it up.

President Roberts: Then how shall we check it?

Mr. Baird: It can be checked by shaking them off into an umbrella-formed receptacle, and then destroying them. I do not know of any better way.

Mr. Barton: I have seen the statement made that in Georgia the curculio has been reduced forty per cent. on an orchard that was shaken a little, and ninety per cent. where it was frequently shook.

President Roberts: How was that done?

Mr. Barton: By the shaking process.

A Delegate: How often?

Mr. Barton: Practically every morning. If you want to make a good job of it, it is a pretty extensive thing.

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President Roberts: Is there no more practical method than that and more thoroughly done, or equally as thorough? I will ask Mr. John S. Collins. Is shaking practical on large pear orchards?

Mr. John S. Collins: I suppose we can spray them with poison, —Bordeaux mixture particularly.

Mr. Whitehead: I have practiced for a number of years Paris Green and Bordeaux, spraying the pears and apples and plums. We had quite a considerable percentage of curculio.

President Roberts: You would have to do it early in the season, I think.

Mr. Whitehead: Yes, as early as you can. The curculio commences its work when the plums and pears are very small.

Question: What is the right time to spray for the codling moth?

President Roberts: Mr. Ritchie is an agricultural man, perhaps he can tell us about that?

Mr. Ritchie: There are many more practical men here than I am, who had better tell about that. It is practical experience that counts.

President Roberts: Mr. Bancroft, when would you recommend spraying for the codling moth?

Mr. Bancroft: We spray for codling moth just as soon as the bloom falls, and again in two weeks. Then, for winter apples we are liable to have a second crop of codling moth come along about the last of July or the first of August, sometimes lasting into September, and we try to spray about the last week in July in order to catch that crop. But we have found that we are liable to have a few stray codling moths all summer, and we have to spray almost all summer , to keep it thoroughly in check on apples. We had one orchard I experimented with last summer. We sprayed all summer and kept it up so late that we had to wipe the Bordeaux mixture from the fruit before packing. We always use Bordeaux when we use arsenic in any form, because we think we receive enough benefit from it to make it profitable. And on that orchard there was hardly a codling moth to be found, and the apples were very bright. They were Staymen apples which are liable to be a little deficient in color, and they were so bright they would almost compete with Western apples. I think this continual spraying is going to give us as bright an apple as the markets will require.

President Roberts: You say to spray when the blossoms fall. They have experimented at Cornell by spraying with the blossoms

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on and they have had quite as good results. What can you tell us on that line?

Mr. Bancroft: I think the only object is to get the arsenic into the calyx before it closes.

President Roberts: Whether the blossom has fallen or not?

Mr. Bancroft: Whether the blossom has fallen or not. I do not know that it is any disadvantage to spray while in bloom, but we were fearful it might interfere with pollenation; it might interfere with the work of the bees a little, and we have always held up on that account. We spray just as quickly as they shed their bloom, and do not get through till three or four days after the bloom has fallen. We have to apply it while the calyx is open and before it closes. There are, of course, a variety of apples where it never closes,—the Nero is in that class. But, if we can get some of the arsenic in before the calyx closes, we are not liable to have much trouble.

Mr. Taylor: What effect would the spraying have on the tree and the fruit before the blossoms have fallen; that is what effect would it have on the bees?

Mr. John S. Collins: The idea of spraying before the blossoms fall is wrong. It is a cruel thing. A man has no business to do it. No man has any business to kill my bees by spraying while the trees are in blossom. I think there is no need of it. I think our bees have just as good a right to consideration as any man. As far as the pollenization going on any better or not any better, there have been instances where they did not pollenize as well. But that idea ought to have been exploded, but it has not been. I am opposed to it. I think it is not right. There is time enough after that.

President Roberts: The fruit growers are always friendly to the bees, and they will all acknowledge it is hard on the bees. But whether it is true that it is really better for the fruit to do it then is a question we should debate a little,—whether agricultural experiments have proved in a satisfactory manner that you get better results from the fruit itself if you spray before the bloom falls.

Mr. John S. Collins: I never saw it. I have seen the contrary myself.

Mr. Reid: I would like to ask whether it will not rust the fruit when you put bluestone and Bordeaux on it. That is the trouble I have had, and, with certain varieties, like the Nyack Pippin and the Ben Davis, we have that every year. I want to find out whether anybody has had the same experience.

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Mr. Bancroft: We have had some trouble with that on the Jonathan. On some varieties it does not have any effect at all. On Jonathan we have more or less difficulty, and we have to be very careful and use an abundance of lime. When we are on the Jonathan apples, we do not have as much Bordeaux as we would have lime, ~~or lime~~ salt.

Mr. Reid: What formula do you use,—what proportion of bluestone?

Mr. Bancroft: Four-four-fifty gallons. Occasionally you can see a trace on some other varieties, but not enough to be noticeable.

Mr. Fraser: We had quite a lot of trouble with spraying in July this year in Western New York, and the experiment station at Geneva has been forced, practically, to re-open the whole question. This year they have been trying mixtures of all kinds of strength, five and five, four and four, and excess of lime, and little lime, right down to one pound of copper sulphate to fifty, and in all cases they have tried, they have had some injury when they have sprayed when it was wet. Their only hope, all they can give us, is, that the injury from spraying is less than the injury from the evil, and so we had better keep on. The Spy was not injured with me this year, but the Baldwin and the Greening were both badly injured.

Question: What is the best way to prevent Kieffer pears from becoming cloudy, or in other words make trees that have been bearing cloudy pears, produce clear fruit?

President Roberts: That is an important question. Mr. Hiester, give us some idea on that.

Mr. Hiester: I think the only way is to keep the tree open, and it is very hard to keep a tree open, for the simple reason that when the fruit gets on it the branches are inclined to come down and press one on top of the other. The pears that hang out open I find are generally nice and clear, and, it seems to me that would be the only way. I have heard some one,—I think it was Mr. Collins,—speak yesterday of his method of trimming the trees. They grow probably more Kieffer pears than anybody else in this neighborhood, and I think that was what he suggested,—keep the limbs short, so that they have not that willowy form, and have the fruit tree hang out open in the center.

Mr. Baird: It is true, that the fruit on the top of the tree is clearer than that on the lower branches, but, to provide something that will destroy the rust is beyond me. I think it can only be done by summer spraying. You cannot prune a tree to keep every pear

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open, and if you do, they will rust notwithstanding. I think it will require some scientific remedy.

President Roberts: Does not the ordinary Bordeaux mixture check that rust largely?

Mr. Baird: It does not for me. I cannot see any benefit in the Bordeaux mixture.

President Roberts: Mr. Collins would you not say it took it off the Kieffer?

Mr. John S. Collins: A little more in some. I think it better to have air than to let them get too thick. Some people have the idea that spraying Bordeaux is beneficial and some do not. Some have done very well. Years ago we used to think the light sandy ground pears would be brighter, but this year it seemed to be the reverse. Some of our best pears were on the heavier ground, and the more rusty on the lighter.

Mr. Hale: We might get some hint in the matter by finding out whether there is anybody here raising pears who does not get rust, and if so, what are their surroundings.

Mr. Taylor: I think Mr. Charles Black told us yesterday that his were not rusted, but were always bright.

Mr. Reid: I would say that from our own experience in Kieffer pears the only thing we can do is to keep forming new wood. We can grow them on new trees or old trees cut back to form new wood, but we cannot do it on old wood. That has been our experience, and it is true that to cut the tree down, while it may strike it in some cases, it does not always prove true. A year ago last winter we cut back some two-thirds of our old orchard with the idea of forming entirely new wood. Those limbs were thoroughly exposed to both sun and air and on those lower limbs, this season, were the rustiest and scabbiest pears we ever grew. There were just one or two limbs left on the lower part, and the upper part taken off. They certainly had all the sun and air they could possibly get.

Question: Name a few of the leading Power Sprayers. Are they a decided advantage over Hand Pumps in large orchards, when the cost of operation, etc., is considered?

President Roberts: I will call on Mr. Brown to answer that.

Mr. Brown: I might be partial in my opinion as to the leading Power Spray.

President Roberts: We will take that into consideration.

Mr. Brown: Of course, the leading power sprays are the compressed air sprayers. I need not say that I am partial to the Niagara

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sprayer, because I think it has more power than any other sprayer on earth, and I think when it comes to spraying crops generally over the country to-day, we believe the work can be done more thoroughly, and more efficiently with power than it can by hand. We have found in practical experience, that it is almost absolutely necessary to control the work and difficulty with which we have to contend to have power in the orchard. I think if anyone asked my advice I should say, have a power sprayer by all means, as against a hand sprayer.

A Delegate: Would you recommend a power sprayer for any orchard?

Mr. Brown: Yes, sir, certainly; because you can do the work so much better and do it so much more rapidly. The question of time is something that enters now very materially into our spraying operations. You can get over an orchard much more rapidly with a power sprayer than with a hand pump, and the scarcity of labor is something with which we have to contend.

Question: What are the most profitable ways of utilizing drop apples and specked peaches in commercial orchards?

Dr. Ward: Feed them to the hogs.

Mr. John S. Collins: Perhaps they can be worked into denatured alcohol, if we have a surplus produced where that can be done.

Question: What are the best methods of preventing the Ripe-Rot or Brown-Rot in peach orchards?

Mr. Wertz: I am not able to give you any information on that subject. I would like to have information myself, sir. I do not know. That is a pretty serious proposition with me. Any information I can get from anyone else I will appreciate very much.

Mr. Baird: I do not know, but I can relate the experiment of J. H. Hale. He goes through his orchard and picks out all the rotten fruit and destroys it; also the limbs that are affected, he removes, and carries them off and starts a fire with them. I do not know that it is of material benefit. I think there is no great benefit derived from the experiment. It is lots of work and expense and not much pay afterwards.

Mr. Brown: I regard that as one of the serious problems for us in the way of spraying, to control the brown rot on both the peach and plum. I believe we are losing more money to-day from that cause than from all other agencies connected with fruit growing, and it is a serious question, something that we will have to consider more in the future than we have in the past. I want to simply

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make the statement here that I met a gentleman in Northern Michigan who has been experimenting the past two years with sodium benzoine in spraying, and from what he says he has been very successful, and the agricultural college and the experimental station of the State of Michigan are taking the matter up, I understand, and are going to make some experiments along that line. I simply mention it so that some others may be thinking of it and making some experiments also. I propose to do it this coming season. This gentleman said that in the plum orchard where he had left the trees without spraying he had not picked a single plum,—they have all rotted away; where he had sprayed with the Bordeaux mixture, the usual formula, he had succeeded in saving about one-half of the plums, or fifty per cent. In the rest that were sprayed with the sodium benzoine, he had not a single damaged plum. That experiment has only been conducted for two years on his place, and the results have been the same in both seasons.

President Roberts: Have you had any experience of this kind, Mr. Lovett?

Mr. Lovett: No, we have not.

President Roberts: I think we may as well pass the question box for the present and take up that matter later if we have time. The next matter on our program is the "Reports from delegates from other societies." Are you ready with your report, Dr. Ward?

Dr. Ward: I have a report from Connecticut.

President Roberts. We are ready for it.

Report from Meeting of the Connecticut Pomological Society.

DR. JOSEPH B. WARD, Delegate.

Mr. President: In making my report as a delegate, it is almost impossible to take up all of the subjects that were discussed. It would make too lengthy a paper, so I have confined my remarks to those things that seemed to me to be of interest to this society.

There is no questioning the fact that one attending the Connecticut Horticultural annual meeting on February last, held at Hartford, was impressed with the fact that they are well to the front in this important industry. The attendance at every session reached about 600. Nearly 250 new members were enrolled. Throughout there was evidence of an enthusiastic interest that from a practical and also from a financial point of view, there was much to encour-

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age the officers and members of the society. One noticeable feature was the large number of ladies that were present at all of the sessions, and quite as enthusiastic as the men. From the balconies of the hall were hung many emblems, a few of them I will give you.

"Let us gather and talk it over." "The meetings of this society help members to solve problems as fruit growers; we invite you to come." "Join the Pomological Society and work for the advancement of our good old State." "No abandoned farms here." "Fine fruits are not luxuries but necessities, their use tends to refinement and better living." "Health, happiness and profit come to the man who follows the culture of fruits." "Membership in the Pomological Society will point the way to success." "Faith in the Fruitful possibilities of the Connecticut soil—that is what the Pomological Society is striving to reach."

To me one of the most interesting talks, that of Mr. Edwin Hoyt, was a subject that has been often before us for discussion—on the pedigree idea in nursery stock. He said, "So much is said and written about thoroughbred or pedigree nursery stock, I deemed it advisable to try to show you the fallacy of the term thoroughbred as applied to nursery trees. The term thoroughbred as applied to cattle, horses, or other animals is well understood by all intelligent farmers, and were it not for the fact that such stock is more expensive to buy than the common bred animals, all who wished to buy stock would buy only the thoroughbreds. When care has been taken to breed up an animal so that it will be able to produce its kind to almost perfection, when mated with one equally well bred, it means a price for such stock which is beyond the reach of the purse of the average farmer. The term thoroughbred carries with it the idea or thought that all which is undesirable has been removed—it is par excellent. Hence the name thoroughbred when applied to nursey stock, carries with it the idea of its superiority over some other nursery stock, and thereby I think some are deceived.

It is not strange that this is so, for too many of us are quite apt to accept these plausible statements as facts.

Thoroughbred trees, pedigree trees. Oh, how nicely it sounds. What an inviting and tempting bait it is. Now let us look briefly into this matter of thoroughbred trees.

We will take an apple tree for our study and see if the term

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thoroughbred, as we understand it, can be reached in its propagation.

To plant the seeds from a Baldwin apple, to raise improved Baldwins, would, you know, be impossible, it never has been done, and never will be done. If the seeds of the Baldwin cannot be reproduced from the seeds from the Baldwin, can we have thoroughbred apple trees from their seeds? We cannot, of course. The Baldwin of 75 years ago, is the Baldwin of to-day, and the Baldwin of to-day is the same as 75 years ago, and equally as good.

I am aware there is a difference in the appearance of Baldwin apples, as may be seen at any exhibition where a number of samples are shown, yet they are Baldwins just the same, but are grown under different conditions, hence the difference in looks. There are some who think that the Baldwin has deteriorated and the fruit is not what it was when first introduced. I do not believe this at all. I do think, however, that the trees have in some cases been weakened by propagating them from scions taken from stunted and unhealthy bearing trees, or from starvation.

A tree growing scions taken from a young thrifty tree and grafted on a young healthy seedling, planted on good soil, well cultivated and well fed, will bear fruit as near perfection as it can be grown, but starvation and neglect in your fruit as well as in animals, will not give perfection.

The statement made by these growers of so-called thoroughbred trees, that the scions are taken from trees known to be annual, and heavy bearers of very fine fruit, thereby making trees thoroughbred, and more sure to bear any year and much finer fruit, is not in my opinion a fact.

It is said simply to catch buyers. Is there any reason for believing that scions taken from an overloaded and may be an old tree or any bearing tree will make a healthier, stronger, longer lived tree and one more likely to bear every year finer fruit, and thus more productive, than from scions of the same variety, taken from thrifty, healthy young nursery trees? I do not believe there is one reason that will stand the test in favor of such propagating. I have often heard the question asked what effect the stock has upon the scion and is not the fruit changed somewhat by the stock the scion is grafted upon. I would say in nursery grown trees, no. In top grafting large trees sometimes with some varieties, there might be a slight variation, while if grafted with some other variety, but little if any difference would be noticed. There can be no material

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difference in the fruit of nursery grown trees of the same variety grown and fruited under the same conditions. That the stock of a properly grown nursery tree changes the character of the variety grafted upon it, there is not the slightest reason for believing. The best trees to plant are those grown in a nursery, on a dry soil, making bright yellow roots, a firm hard wood, that will stand the winter's frost, and that will not shrivel up from a day or two of exposure. Do not buy any trees and set them in poor or wet ground, and neglect to feed and cultivate them, for they will not produce thoroughbred apples, neither be led into buying trees from plausible statements made by nurserymen, for with the great competition there is in this line of trade, it does not tend to make saints of them all, any more than it does in some other lines of business. Know your men from whom you buy, and remember that he who buys a really good tree and plants it has as much or more to do in making it a 'thoroughbred tree' when it bears than has the nurseryman from whom he buys it."

Mr. Baird: There is a lot of sound sense in that paper. I have observed apples all my life, and I have not yet been able to find out or to ascertain what effect Baldwin apple grafted upon a seedling root has upon the root. Why a Crab apple should produce fine Baldwins. I have not been able to find that out. But, it is true that you cannot produce apples different from the scions.

President Roberts: Dr. Ward has made us a very full report. What action will you take on this very interesting report of Dr. Ward?

Mr. John S. Collins: I move that it be accepted and referred to the Executive Committee. Motion carried.

President Roberts: He made such a good report to us, we will have to send him again. Mr. Hale has a report for us.

Report from the New York State Farmer's Institute.

HENRY E. HALE, Delegate, Princeton, N. J.

This report is very short to begin with. This meeting was held last February, about a year ago, so that it is very late news now. Our speaker, Mr. Craig, who was here yesterday, if he were only here to-day, he could perhaps give a supplement to this.

Prof. Craig, of Cornell University, gave an interesting address (illustrated) on the forcing of plants by artificial light (acetylene gas) and by anesthetics (ether). The illustrations showed marked

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differences in the maturity of plants treated to either of these stimulants. Bulbs (lilies) were treated; likewise lilacs, rhododendrons, and various flowers, detached limbs, and rhubarb. The ether was administered by placing in a tight box with the article to be treated; and leaving it about thirty-six hours to evaporate. A treatment of seventy-two hours was found to be injurious. In the case of bulbs the ether acted much more effectively if the bulb was not in earth (while being treated). The effect on rhubarb was very decided and the quality of the product extra-fine. The acetylene light was used after sunlight was gone. One of the pictures shown was taken by acetylene light.

Some of our hardy native plants, as asters and golden rod, seemed to have good temperance principles, and would not respond to stimulants. The exps. at Sta. were not completed. The lecturer was not able to state accurately the value of this method of hastening growth.

President Roberts: What action will you take on the report of Mr. Hale?

On motion it was voted that the report be accepted and referred to the Executive Committee.

President Roberts: We are favored this year in having representatives from several of our sister societies. We have sent delegates to them and they have come back with new suggestions which have been a great help to us, and this year the sister associations have sent representatives to us and we welcome them most heartily. We are very glad to have them with us, and we would be pleased to have a word from them. I will first call on Mr. Orlando Harrison, of Maryland.

Mr. Harrison: Mr. President and members of the New Jersey State Horticultural Society, as a fraternal delegate, I am here to bring greetings from Maryland. New Jersey has been regarded as a sister State in fruit growing for years. Going over your State, as I have done, one would naturally suppose that you are letting the fruit growing go to the wayside, but judging from the appearance of the fruit here, it would remind us that someone is still in the business, with prospects of doing even better than in the past. Years ago, Jersey was the base for fruit growing, and I think Delaware and Maryland, possibly, followed next to it. You people have some advantage, at least, over ourselves, because you are at the gateway of the greatest markets on the continent.

In reference to fruit growing in our own State, we are more determined to make fruit growing a success than ever in the past. I

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believe on the peninsula of Delaware and Maryland, there are more peach trees growing to-day, and, possibly, in better condition than at any time in the past thirty years. The men who are engaged in fruit growing are growing it from a commercial standpoint. It is true, there are many who do not care for their orchards, but we have a few who do, and I believe they will set the pace for others that will make it rather hard for the man who does not care for his orchard to follow, especially on the Eastern shore. So far as apple growing is concerned, especially on the Eastern shore, it has been observed by our friend Mr. Bancroft to be found profitable. Mr. A. N. Brown here can tell you about the history of apple growing. I am interested in the Western shore of our State, where we are growing the late winter varieties. There we are growing as the main standard York Imperial, and second to that is the Grimes Golden. We find the elevation in various localities there about 1,100 feet above the sea level. A gentleman remarked here yesterday, the elevation possibly does not have so much do with it. We have a well-drained rich soil, and it is profitable for growing apples.

I believe that the Eastern shore of Delaware and Maryland, right up the Peninsula and New Jersey, have in the east far better opportunities than many other states. Why should not we grow fruit? We are near the great markets. There is no reason why we should go west any longer for cheaper land. My friends, when you are crowded out from fruit growing in New Jersey by New York City, or by the City of Trenton, come to the State of Maryland, we will welcome you and give you plenty of land for fruit growing where I believe it can be made very profitable to you.

Just one word in reference to the State Horticultural Society. As President of the Maryland State Horticultural Society, I will ask that you send representatives to our Society, which meets December next in Baltimore City. We met there last December, and had a large exhibit. And now we have asked the florists and gardeners and all other kindred societies that are interested in that branch to unite with us. We expect to make the Society stronger by uniting the various interests of the tillers of the soil, and we would gladly welcome members of this Society to be with us next December.

President Roberts: That is very kind. No doubt we will accept that invitation of Mr. Harrison, to the meeting of his association. We have heard a great deal about fruit in Delaware and

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Maryland, and we are glad to have Mr. Bancroft with us this morning and should like to have a few words from him.

Mr. Bancroft: Mr. President, Ladies and Gentlemen of the New Jersey State Horticultural Society. This is the first opportunity I have ever had of meeting with your Society, and I have thoroughly enjoyed every moment of it. My reception here was very cordial. We are situated in Delaware a little different from what you are in New Jersey. You have here North and South Jersey, and climatic and soil conditions quite different. In Maryland they have the same conditions on the Western and Eastern shore. But in Delaware we do not have that. We start in the upper part of the State with our heavy soil, growing lighter all the way down, and in that soil fruit will grow almost to its perfection. We started in some fifteen or twenty years ago growing apples in Central Delaware, and we were laughed at, and when we spoke of growing winter apples, we could not do it, New York said, "Where is your place to grow winter apples?" We made many very costly mistakes. As our friend Mr. Harrison said, the York Imperial apple in Western Maryland seems to be one of the apples for that section. So we planted it heavily, considering that what would do well in Western Maryland would do well with us. We found we made a great mistake. York Imperial was not the apple for Delaware and the Eastern shore.

Barring those mistakes though, we found that we could grow in Delaware almost as good an apple, if not quite as good an apple. We can certainly get as good a quality as is grown anywhere in the United States, and I am hoping that with thorough spraying we will be able to get as good a color. The apple business started in Central Delaware. And the next meeting of the Peninsula Horticultural Society will be held in Dover next Tuesday, Wednesday and Thursday, January 8th, 9th and 10th, and our president and secretary told me to be sure to give a cordial invitation to all the members of the New Jersey State Society to meet with us. We will have a nice display of the fruits grown upon the Peninsula. The meeting will be held in the opera house in Dover. The headquarters of the Society will be at the Richardson House. There are two other large hotels in case the Richardson House is overcrowded. We can give you splendid hotel accommodations. I think we can make it enjoyable for all who come, and we would like to see a large delegation from New Jersey.

I do not know that I have anything further to say at present, but

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if you will come to Delaware we will at least give you a cordial greeting, and, I think, show you a pleasant time.

President Roberts: That invitation is most kind and cordial, and in answer I will say that a good many of us intend to attend there next week, and anyone who does not go will miss a treat. We have often been told, and we come to realize each year, that, before we thoroughly understand the apple business we must go up to Adams County, Pennsylvania, and see, observe and look into the methods of raising apples up there. We have a representative from there with us this morning. I will call on Mr. Robert M. Eldon, of Aspers, Adams County, Pennsylvania.

Mr. Eldon: Ladies and gentlemen, I feel that our section can hardly represent the State of Pennsylvania, and that I can hardly represent that section. What I can say is that the apple industry is beginning well in our section of Pennsylvania. We are on the side of the South Mountain range, which extends from Maryland into Pennsylvania, as far as Harrisburg, and we hope that some day Adams County will be a proper representative for the district. It is the home, as you all know of the York Imperial; that is, Adams County claims to be its home. York County claims it too. We will not dispute about that, but we think the York Imperial is the apple which will be commercially most valuable in that section, and we find there especially soil conditions which will grow it. We hope also to add to it Staymen's Wine Sap, Grimes' Golden, and perhaps Jonathan. Those who are planting apples in that section plant York Imperial largely. If you were to look at the soil survey you will find Adams County much like a crazy quilt in color. It belongs to the oldest geological formation, and along the foot hills of the South Mountain we find the soil upon which we hope apples can be profitably grown. We find there also the various gravels which are adapted to peach raising.

But we are not favored in that county, as you are in New Jersey, because we are far from market. We would like to grow the fancy fruits that you people grow. If we were between such centres of population as you are, we would have perhaps no need to grow York Imperial so largely. But the apples up there must be grown so that they may be shipped and kept in bulk until they are marketed. The tender varieties cannot be put on the market so profitably as you can put them in from New Jersey and from Delaware.

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We would be very glad to have any of your members come to see us, and we extend a hearty welcome. We have a local organization which we take great pride in. We had what we thought was a very nice meeting during the month of December, the twelfth, thirteenth and fourteenth. We got along better than we hoped. We have some members from Delaware, some from New Jersey, some are present here, and we had a couple from West Virginia and from other counties in Pennsylvania. They all came and took a great interest.

Before I close I would like to say a word with respect to county organization. I do not know how you do in New Jersey, but I expect you do it better than we do. We find that the local organization is the one from which we get our inspiration. We meet monthly, we have our own little hall, and we have an interchange of ideas which we find is very beneficial to us. We extend to any of you who come into our section a very cordial welcome, and will be glad to see you.

President Roberts: That is very kind. Somehow, I always pay a little more attention to a man when we know who he is, and we know he produces and what he produces, and that we can see clear through and see the result. We have with us one of the largest and most enthusiastic peach growers in the East. I will call on D. Maurice Wertz, of Quincy, Franklin County, Pennsylvania.

Mr. Wertz: Mr. President, Ladies and Gentlemen. That is a very nice introduction, certainly calculated to make me feel good, and I hope it will the members present as well as myself. I only wish I were worthy and deserving of it.

President Roberts: That is your reputation.

Mr. Wertz: I fear I cannot sustain it. I wish I could. However, we do do something up in Pennsylvania. I do not know that we do such big things. We have a big state, big resources, and big trees. I wish we had some of your big people to come up and help us along. I know we like to talk of Pennsylvania as being one of the older states in the fruit business and the trucking business, and you will be glad to know that we have obtained our inspiration, or our knowledge, very largely from New Jersey and other states like yours, and we wish to give you the credit for all that. But we certainly would like to have some of you people from New Jersey and this vicinity to come over and help develop the region and resources we have in Pennsylvania. You do not have any idea of what we have over there, gentlemen. You

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ought to come in a couple of weeks, for we will have a big time at Harrisburg. You ought to come for your own personal interest if for nothing else, and you would feel satisfied. What you grow in New Jersey we consume a great deal of in Pennsylvania. Come over and see your customers and become acquainted with them and learn to know some of them.

Speaking of Harrisburg, our meeting will be held there in several weeks. We will be very glad to have you come. We will have a big time in general. We are going to inaugurate a new governor and a new capitol building. It is a big one, a fine one, something that we are proud of, and our children, I think, will have cause to be proud of it, and our children's children. There has been a good bit said about it, as you all know, but you cannot believe everything you hear. Come up for yourselves. It is a fine time to see the resources of the State. Then, as a climax to that, the next two days the State Horticultural Society meets at Harrisburg and, while we may not be able to make it as interesting for you as you have been able to make it interesting for us here, we will be very glad to have you come.

A word in regard to our county organization, and the local organization. I do feel that it is certainly an opportunity to accomplish just what you are doing in this State. We are trying to work along that line in our State. To-morrow night in the County of Franklin we want to make a strong effort to organize a county organization. The State organization meeting is being held only once a year, and then there is a certain amount of formality and reports, and this and that which absolutely cannot be gotten away with, and the first thing we know the two days are past, and after all we have not gotten down to the kernel of the business, nor have we what we actually want and need, and you have travelled for some distance and go home, and possibly feel after all a little bit disappointed at the fact that you have not gotten what you actually wanted and went for. If we can have this county organization and get together more frequently, and interchange ideas and questions, I believe we can be very greatly benefited and profited. You all know the present age is an age of concentration and consolidation in the large moneyed interests of our country. Well, there is not any interest after all as large as the agricultural and horticultural. There is nothing in this whole great big country that equals it, and there is not any reason why we should not consolidate and centralize or work together in harmony in some way or

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other. I only wish we could corner the agricultural market as they can corner copper, all over the United States. I bet the people would buy apples and peaches and pay for them. However we will admit that we cannot do that but we can benefit ourselves by working together and in harmony, and it seems to me the first step is these small organizations, and then let them be centralized into these state bodies. I thank you, gentlemen; it has been a pleasure and a delight to be with you. I have enjoyed it very much and have been greatly benefited.

President Roberts: We are very much obliged for those remarks, but think we will not just agree with the speaker about cornering the market. We do not like to see these other men able to corner the market, and, I am sure, we do not want to corner the market on apples. But we do want a good fair price and an honest price. We want to raise lots of apples and get a good fair price for them, but we do not want to make anybody pay an unfair price or a cornered price, a price that is not warranted by a good substantial return. I will call for a paper by Mr. Blackwell, of Titusville, New Jersey, on "How I Grow Bartlett Pears."

Mr. Blackwell, Jr.: Mr. President, I am Mr. Blackwell's son. He was ill to-day and not able to be with you, and he asked me to come in his place and read the paper.

President Roberts: We are very glad that Mr. Blackwell has a son.

How I Grow Bartlett Pears.

C. E. BLACKWELL, Titusville, N. J.

My soil is a sandy loam of considerable depth, being a deposit left by the floods of the Delaware River in past ages. The orchard is protected from winds and storms on the east and north by a range of hills about two hundred feet high. It has the shelter of a large apple orchard on the west. The land is so low that I hesitated to set pears on account of late spring frosts, as I had suffered greatly from frost growing sweet potatoes on the plot. To my surprise frost has not done much damage to the pears as yet.

My orchard of three hundred and twenty-four trees was planted in the spring of eighteen hundred and ninety-four. I bought the trees of a nursery firm in western New York. They were splendid

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two-year-old trees. I bought them at the very low price of ten dollars per hundred—quite a contrast to the prices of the sixties when such trees sold for fifty dollars or upward.

At the time I bought these trees, the Bartlett was under a cloud on account of blight and the growing in favor of Orientals. I set the trees early in the spring in order to get full growth the first summer. The ground had been in clover sod. I dug holes large enough to take in every root without bending or crowding—cut the ends of all roots of any size off smoothly; sprinkled a double handful of Mapes' corn manure around the tree as the dirt was filled in, being careful to spread the roots as much as possible, careful also to work the dirt in among the smaller roots with my hands and tramp the dirt firmly at the finish. I took considerable pains to set the strongest roots towards the west, also leaned the tops slightly to the west, as that is the quarter our strongest winds come from. The trees were set twenty feet apart, each way. As a result of this careful planting every tree made a good growth the first summer, and now but one tree in the whole orchard is out of line, that is, leans enough to be noticeable. The trees were cut to a cane at time of planting, leaving the trunk three feet high.

I have trimmed the orchard very little in the way of thinning, just enough to give a balanced head. I have cut the tops back annually, I would not like to recommend this method to all growers, but in my deep soil the trees are naturally inclined to grow very tall and slender and I have a limit to the height of a Bartlett pear tree, which is about twenty feet.

The first year my orchard was set, I planted corn in it, fertilizing with four hundred pounds of Mapes' corn manure per acre. I cultivated it thoroughly until the first of July, then sowed red clover at the last cultivation, covering seed with a one-horse cultivator. The second season the clover was plowed under when in full bloom, and the ground cultivated until the middle of July, when clover was sowed again, seed being buried lightly with an Acme harrow.

The third year the ground was corned, the same amount of fertilizer applied and clover sowed as the first year. The fourth season one acre was planted with potatoes, the rest was plowed and worked with the cultivator the same as the potatoes, except the potatoes were fertilized with six hundred pounds of Mapes' potato manure. The orchard not planted with potatoes was again seeded with red clover in July.

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BARTLETT PEAR ORCHARD
OWNED BY C. E. BLACKWELL.

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The fifth season the treatment was the same, except the acre of potatoes was selected in another part of the orchard. The sixth year the remaining acre not yet cropped with potatoes was planted, and the remainder of the orchard treated as two previous years.

All the fruit that set was pulled off yet this year as I want a tree, especially a Bartlett, to be good and strong before I dwarf it by letting it bear a heavy crop of fruit. The seventh year the ground was plowed early in the spring, worked frequently until first of July, then seeded to red clover, and no fertilizer applied. We allowed the trees to bear some that season and the pears sold for sixty dollars.

My trees have always been sprayed with Bordeaux mixture annually; formula: five pounds lime, six pounds sulphate of copper to fifty gallons of water, to which was added one-third pound London Purple, when the trees were allowed to bear fruit.

From the seventh to the eleventh year the orchard had practically the same treatment, producing about one hundred dollars worth of pears annually.

In the summer of nineteen hundred and four the scale first showed in the orchard, and by the spring of nineteen hundred and five, quite a number of trees were damaged, two so badly that I took them out and filled in with new trees. My loss of trees up to this time, has been two from scale and three from blight. I have nine trees other than Bartletts set through the orchard as fertilizers, though I do not now think fertilizers are necessary for Bartletts, as I have other trees of them quite remote from other varieties, that are bearing well. During the winter of nineteen hundred and four and five, we applied coarse stable manure, eight two-horse loads per acre, thrown in a circle around the tree, a little farther out than the limbs extended. In the spring we plowed the ground and cultivated until the drooping limbs prevented. We sowed no grass seed. In March we sprayed with lime and sulphur for scale, formula: 24 pounds lime, 17 pounds sulphur, 13 pounds salt, thoroughly cooked with steam. After the blossoms dropped we sprayed with Bordeaux. There was a good setting of fruit, and, as the season was a dry one, I mulched the trees heavily with grass and weeds, and drew water from the feeder of the Delaware and Raritan Canal with a syphon to irrigate the orchard.

The crop of pears netted me four hundred and thirty dollars. I

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sprayed the orchard with refined coal oil after the pears were picked.

Last winter the same application of stable manure was made, with the addition of two hundred pounds of Mapes' corn manure per acre, applied in May and harrowed in. Last March the trees were sprayed with lime and sulphur. We are very careful to do the spraying thoroughly, selecting days when the wind suits and going each side of the row, stopping twice to each tree on each side, and crossing the other way, which makes eight stops to each tree. We also spray now with pure kerosene in the fall as soon as the pears are picked, being very careful, however, in the application. When spraying with Bordeaux, I wait so much for favorable winds to spray each side of the tree that it often amounts to two sprayings.

I am not an advocate of any more of the Bordeaux than is absolutely necessary—think much damage may be done by using too much. We apply the materials with Gould's Monarch force pump, or the Niagara Gas Sprayer, using one lead of hose with two Mistry nozzles on the former, and four on the latter sprayer. The gas sprayer is almost *the* machine, and I think the manufacturers will yet discover the missing link.

Last spring the limbs were so low that plowing close to the trees was impracticable. I substituted Clark's Extension Cutaway Harrow for the plow, and the Acme Harrow to smooth the ground after the Cutaway. This, however, did not work very close to the trees, so I applied a heavy mulch around the base, which killed all the sod near the trees. The seeds in the stable manure have a tendency to make a sward around the trunks. I have a large flock of chickens, and a portion of them range in this orchard. Late in the fall after the mulch has somewhat tendered, they scratch under the trees and spread the mulch. Where there is considerable left around the base of trees we throw outward with a fork, thus leaving no mulch near the tree during the winter. It has been my custom to run the mowing machine over the ground twice during the fall. Last year the trees were so low—the limbs lying on the ground in many cases—I mowed the undergrowth with a scythe just before picking time.

The crop of pears last season was very good, the yield being two hundred and thirty-three barrels. Gross sales $760; net receipts $615.

My method of harvesting the crop is to make the first picking

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entirely of number ones, sorting on the trees. I use sixteen-quart tin pails and empty in barrels, facing two layers on the head right from the picking pail, then dumping the rest, shaking barrel every time a pail is emptied, filling as high as staves, carefully placing top layer so the head will settle down evenly when screw pressure is applied. In about two weeks I make second picking; this time the orchard is picked clean. The pears are dumped in heaps for sorting, under a tent, which we move as needed to be convenient. We also use tent in picking the first time, to shelter barrels and tools. The second picking is sorted in two grades; we get quite a percentage of number ones this time, as some were missed the first picking, and some that were too small are grown large enough for first grade. This method of sorting on trees applies only to the fruit picked by my son and myself.

If we have one or two helpers they try to pick number ones the first picking, but the pears they pick are dumped, and my son or myself, or a trusty man, sort them over before barrelling them. I never permit any haphazard packing. Always have barrels neatly stencilled with name of variety, grade and my own name. Your Executive Committee gave me, as a subject for my paper, "How to Grow Pears." That title implied more than I could well treat, as I don't know as I know how to grow pears to the best advantage. I am now growing pears in another orchard with very different treatment, but the conditions are entirely dissimilar. And, one thing is certain, different methods may produce satisfactory results. This lowland orchard of mine has not produced anything extraordinary, still, being so nearly immune from blight as yet, notwithstanding the great amount of nitrogen furnished by the stable manure and practically eleven years successive clover crop, the orchard furnishes an object lesson that may surprise some of our oldest pear growers.

President Roberts: The subject is now open for discussion. Mr. Blackwell will answer any questions.

Mr. Brown: I think I understood Mr. Blackwell to state that he sprayed his pear trees with kerosene after they had bloomed; first with the lime and sulphur wash when they were dormant and then after the foliage was out, he sprayed kerosene. Did I understand that correctly?

Mr. Backwell: We sprayed with kerosene just as soon as the fruit was picked.

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Mr. Brown: When the foliage was on?

Mr. Blackwell: When the foliage was on.

Mr. Brown: And you did not injure the foliage?

Mr. Blackwell: No, we are very, very careful. I always hold the nozzle myself, and always try to take a day when there is bright sunshine.

Mr. Brown: If you do that for the scale, why do you spray the lime and sulphur wash when the trees are dormant?

Mr. Blackwell: We think the scale does very much damage after we pick the fruit, that is, in the fall.

And, so far as I know, no one has sprayed with the lime and sulphur in the fall, but, for fear that during the late fall the scale may do some damage, we spray with kerosene and try to hold it in check; we do not try to cover the whole tree, just to hold it in check until the next spring, when we can spray it thoroughly with the lime and sulphur.

A Member: Is that done every year? I understood it was done only once.

Mr. Blackwell: We have done it every year since the scale appeared in the orchard.

Mr. Brown: I would like to compliment Mr. Blackwell for that paper. It is a very practical and a very valuable paper, in view of the fact that the man who can grow Bartlett pears for the American market for the near future has got money. That is all there is about it. The price of Bartlett pears seems to be advancing right along, and the difficulty of growing them is increasing.

A Member: I would like to ask Mr. Blackwell how he controls the blight?

President Roberts: Have you had that as yet?

Mr. Blackwell: We have had very little blight in the orchard, and we have cut it out wherever it appeared. I understand that it is usually the worst about the time the trees begin to bear, and as it happened we have always sprayed to prevent the scale, and we have a theory that the sulphur in that mixture helps hold the blight in check.

Mr. Skillman: I would like to ask Mr. Blackwell, do you give those trees a thorough culture every year?

Mr. Blackwell: We give them a thorough culture till about the middle of July.

Mr. Skillman: Do you also fertilize and keep the tree thrifty and growing?

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Mr. Blackwell: The trees are given new bottom growth every year.

Mr. Skillman: And you do not have the blight?

Mr. Blackwell: No, sir, not seriously.

Mr. Skillman: Then the Lord is very good to you.

Mr. Blackwell: Very, indeed.

President Roberts: The trees have been eleven years in growing, and year after year they have been given a top dressing of stable manure around the trees. I will ask Mr. Repp if he would recommend that for general use?

Mr. Repp: In our section I would not do it. I do not know about this section. I thought I knew how to grow Bartlett pears last fall, but this fall I have changed my mind. I have found out I do not know how to grow them. Bartlett pears are a dangerous thing to deal with. Last year we had no blight at all, and this year we have, so that we lost five hundred out of two thousand trees. It came almost like a fire, and very quickly. The one orchard on which we had a good crop the year previous, was this year almost wiped out. We had such a warm winter that it started them blooming early in the spring, and the foliage was way down to the bottom, and we did not use any stable manure at all.

President Roberts: Mr. John S. Collins has told us that for the Bartlett pears one coat of manure is bad, two coats will be much worse, and three coats of manure is sufficient to kill any Bartlett pear he knows. I will ask him what he thinks of this paper.

Mr. John S. Collins: We do not do that with ours.

President Roberts: Would you recommend it for large blocks of Bartletts with others?

Mr. John S. Collins: I think Mr. David Baird had some experience with a few hundred Bartlett pears by themselves. I think they did not grow very well. Now, it is quite likely they lacked pollenation in some way.

Mr. Hale: I do not know exactly whether the gentleman mentioned the exposure of the orchard. Was it north or south or east or west ?

Mr. Blackwell: I thought I made it clear in the first part of the paper. It is protected on the east by a high hill—the orchard runs almost under the hill,—and it has principally a southwestern exposure.

President Roberts: That is their method, and they get the pears.

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Mr. DeCou: A few years ago the department at Washington issued a report on the blight. At that time they said they knew of nothing to stop it. As a preventive they whitewashed the trunks of their trees, mixing sulphur with the whitewash, and where they have done that they have had no blight, and it seems to me the key-note to Mr. Blackwell's success is that he sprays with lime and sulphur.

President Roberts: Well, they tell us that the blight is largely spread from the blossoms, with the bees to help it, and they work from the blossoms and run to the trunk. How about that?

Mr. Skillman: I do not accept that theory, Mr. President. My theory is that the blight comes from within, not from without.

Mr. Blackwell: I would like further to say that for the care of this orchard in the future, father and I have determined that if the blight keeps on in the orchard we will keep on spraying for the scale with the salt and sulphur, in the hopes that the sulphur helps hold the blight in check.

Mr. Hiester: I would like to say a word on this subject, as it is a very interesting one to me. I have been growing Bartlett pears for twenty-five years. I never sprayed the Bartlett pears with lime, sulphur and salt, and it is the only variety that has not any blight in it. I think that in a dozen years I have not lost a dozen limbs of my Bartlett pears with the blight, and I have almost every year dosed those trees with farm-yard manure,—a good big wheel-barrow full laid near the tree, and out around the branches, and had from eight to ten inches of new growth every year, and the Bartlett is the one variety of mine that has not any blight. I think we do not know very much about the blight. Nearly every other variety that I have grown blighted badly in the last years,—all of my Sheldon, and lots of other pears,—and the Bartlett has stood right along, and we have no tree blighted. I have put the Bartlett in and kept them growing thoroughly healthy. We have begun spraying with lime, sulphur and salt now, because the scale appears; but while this gentleman did spray with lime, sulphur and salt and had no blight, it was not the lime, sulphur and salt that prevented it, because I have not had any blight and did not spray with the lime, sulphur and salt.

Mr. Hendrickson: I would like to say in regard to my Ben Davis apple orchard, I have sprayed for two or three years and this year the blight did not appear. Mr. Dykeman attributes that blight

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to the locust, and says that every year we have the locust we will have the blight.

Mr. Whitehead: I think our friend, Mr. Brown, and others have stated the situation so far as Bartlett pears are concerned, pretty nearly right. While it is one of the high priced fruits on the market at this time, we know that the Bartlett pear is one of the most difficult ones for us to grow at a profit. My own experience is that some thirty years ago I put out an orchard of 2,250 Bartlett trees. I drained the subsoil, and put them out under the most careful possible culture. I brought them into bearing. They brought me, for several years, a profit up in the thousands of dollars. I thought I had what might be called a paid-up policy of income for the balance of my life. Every year I lost a few trees, even at the beginning of their bearing. I did not become discouraged over that, although they were generally the best trees which makes them subject to blight, I think, more than others. And my remedy was to plant two for every one that died. I followed that up for quite a while, until a few years ago, as my neighbor, Mr. Skillman, can also testify, the blight struck our section of the country, and in two years my Bartlett pear orchard of 2,250 trees was a thing of the past. We have no more Bartlett pears, comparatively speaking in our neighborhood. Even in the village gardens and the farm yards, those who had pet trees, they have passed away. This accounts, as I say, for the high price of Bartlett pears. To apply so much fertilizer to the Bartlett pear after it commences to bear, and force it up for fine fruit, is almost a sure plan of bringing about the blight, and Mr. Repp's experience of losing five hundred of those trees last year helps to prove that also with very excellent, good culture they are liable to be lost. This is also borne out by a visit to different parts of the west, where they have attempted to grow Bartlett pears for over a quarter of a century. When they plant them on their rich new prairie soils, or give them high culture, the blight invariably takes them away after they have borne a year or so. So I say it is a very precarious business for this Society to encourage new growers and others to plant Bartlett pears from the commercial standpoint under our present knowledge of the blight. I press these ideas upon you after having had a pretty severe experience.

Mr. Morgan: Mr. John Repp, some fifteen years ago, said that he lost more pear trees by late fertilizing and forcing unnatural late

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growth and that that caused the blight. If you apply fertilizer, apply it early in the Spring.

President Roberts: I would also say quick acting fertilizer.

Mr. Morgan: In my short experience in noticing blight on apple trees, pears and quinces, I have noticed it almost invariably comes where the trees have been in bloom. One very often finds pears formed, and where the blight enters, it will start down that limb. Sometimes I have cut a limb a little ways down to where I thought the sound wood was, and then we would have wet, humid weather, and a little later on I found the blight still farther down the limb. I have tried it with quince trees that have been about six years old, and I kept cutting all summer beyond that blighted portion, and in the Fall I had to cut the whole tree down. I have also noticed that where the blight starts on the body of the tree, that almost invariably it starts out where the small growth starts, under the suckling growth, and very often what we call the body-blight starts from the small young growth on the body or trunk of the tree.

President Roberts: A motion to refer this paper to the Executive Committee will be in order.

On motion it was voted that this paper be referred to the Executive Committee.

President Roberts: Mr. Dye, the Secretary of the State Board of Agriculture, has an announcement which he wishes to make.

Mr. Dye: I want to invite the members of the State Horticultural Society to attend the meeting of the State Board of Agriculture week after next, on Wednesday, Thursday and Friday. We feel that our work as Horticulturists and Agriculturists is one, notwithstanding the nice distinctions that our friend yesterday spoke of. If you will notice by looking over the programme which I have left with Brother Whitehead, and you can get one as you go out, we have left Horticulture off our programme. The State Horticultural Society is doing its part so well that we think we do not have to supplement it in the State Board, so we want you all to come there and help us to fight these other questions.

President Roberts: In these last two or three years, Mr. Dye has given this Society very substantial help. He has advertised our meetings at all the institutes and helped us out in other ways, directly and indirectly, and that has tended largely to our increased membership, and our increased interest in these last two or three years; and, on behalf of the Society, I wish to thank him for what he

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has done for us. While I am on that matter, I wish to speak one more word on the item of membership. The iniation fee of this Society is one dollar. We have no yearly dues. One dollar covers all the expense till our dues are changed, and if that is done it will be in open meeting where everybody will have a vote and a voice. That will give us all the money we need,—one dollar initiation fee,—we do not need any more. We wish to have every fruit grower a member of this Society, and everyone interested in fruit, or anyone who would possibly have an interest in fruit growing, we would like to enroll them as members. To help along in this, I am directed by the Executive Committee to appoint a Committee, and I will appoint Albert Repp and Howard DeCou to go around among this body and see who would like to be members. Our Treasurer Mr. Blackwell is not in attendance to-day. We would be glad to have him with us, but we will appoint this committee of two to assist the treasurer, and we would like you to enroll,—the fee is small, merely nominal. Mr. Repp, we will have to call on you for the next paper relative to "The Growing and Marketing of Apples."

The Growing and Marketing of Apples.

ALBERT T. REPP, Glassboro, N. J.

Mr. President, Ladies and Gentlemen:

Your President asked me last summer to give a practical talk on apple growing in the State of New Jersey. You have heard of the Spitzenberg, the Newtown Pippin, the Red River Valley, and the Ben Davis of Missouri, and various different kinds. I am going to talk of one State, the State of New Jersey, and her trade. I think it has one of the greatest possibilities in growing of any State.

Some of you have heard here at these meetings talks on apple growing by men from Connecticut, Delaware, Northern New Jersey, and Mr. Hiester, President of the Pennsylvania State Horticultural Society. The remarks I will try to give you will be from Southern New Jersey. The question is often asked me at various meetings, if we can grow apples in Southern New Jersey. They seem to be astonished when I say, "Yes." I think the proper place to set a new orchard for profit, and in a commercial way, and for certain varieties is on sandy, gravelly soil. The variety we are mostly setting is the Winesap, which I think is the greatest money maker today. I have in my hand the apples which grew on very sandy soil. To se-

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lect the proper soil, do not look at the first depth of 12 inches, but look farther down, as far as the roots will grow, so as to have the tree get a deeper bearing surface, and it will make more root, more wood and more fruit buds. Our preference for sandy and gravelly soil gives the fruit good color, and they bear almost every year, and the foliage is not so thick and dense. The fruit grown on dark and heavy soil makes dark colored fruit, and they do not bear so young and the foliage is thick and dense. The light soil fruit is liked a good deal better when we sell them.

We prefer two years old trees that have made a good growth the year previous. We set them out in the fall twenty feet apart each way, when the soil is in a drier and finer condition. The variety to set twenty feet apart each way is the Wine Sap, although we can get more out of the ground when the trees are young by putting them forty feet apart each way, and growing crops in between, we find that by planting them twenty feet apart each way that in the early life of the tree we can afford to cut them out when they get about fifteen years old. We cut them out diagonally, not exactly over every row, but cross-wise, making them twenty-nine feet apart. If you cut them out the other way you would have them twenty by forty.

We start to fertilize the first year with two or three handfuls to the tree before we plow them, increasing as they grow older, putting on as high as a ton to an acre. That is in the old orchards. Before we plow in the spring, we drill and keep the cultivation up until the first of July, using an ordinary pivot wheel cultivator. We find the pivot wheel drill is better for our light soil, as it keeps the weeds down better and gives better cultivation than any other drill we can find.

We use no green crops nor manures of any kind on our place, as we found them not profitable after long years of experience. We use the commercial fertilizers. The green crops make the wood, but we find that they do not bear the apples. In New York they have trees twenty years old before they get a crop of apples. That rich and humid soil there should bear much sooner than that, but they do not make the fruit bearing surface for the buds with green crops.

The fertilizer we use is two and a half per cent. of nitrogen, eight per cent. of phosphoric acid, and ten per cent. of potash, deriving nitrogen from blood and fish, phosphoric acid from phosphate rock, and potash from muriate of potash. We use five per cent., of potash, but if the potash were a little heavier, it would do no harm.

We prune every year, very lightly the first few years, and we do

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not cut the ends of the limbs off unless they are in danger of being blown over; we usually cut the tops of the trees off when they start, but in the first few years we let them grow, first trimming them up with three or four limbs coming out; of course, if there is danger of them being blown over, we cut them off, but we do not approve of cutting the ends of the limbs off, as we used to do. My father has lost hundreds of dollars by cutting the ends of the limbs off. We find if we do not cut the ends of the limbs off, that there is a fruit bud comes out on the end and bears apples.

We start to spray in February with crude oil. The reason for starting to spray so early is so we can finish before the bloom starts. We have so many that we cannot wait until good weather. We prefer March for spraying, when the weather is warmer, but we cannot wait, as we have so many we have to start early to get over the ground. We have found the oil more effective by having it warm. Heat it to about a hundred and twenty-five or a hundred and forty degrees, by live steam, well agitated before using so the heavy oil does not separate from the lighter. We have a boiler getting up steam and run a pipe out from the boiler, putting a hose on it, so that there is no danger of escaping. We then put the steam in this oil, and it keeps warm until we get it out. It is astonishing how long the oil will keep warm. It goes a good deal farther, is more "appliable," runs on the tree quicker and does not dry. The use of cold crude oil we find very dangerous, killing young trees when it is cold. That is one important thing, to agitate the oil, so that the lighter oils do not separate from the heavier oils for the gasoline and benzine will separate from the heavy oils. You would pump the heavy oils first if you do not agitate them, and the lighter oils would be pumped up afterwards and that would be very dangerous for the trees.

Just before they begin to bloom we spray with Bordeaux mixture, spraying as soon as the blossom drops. We use five pounds of sulphate of copper,—we could use six, but we find that five pounds are sufficient. The best time for spraying is just before the blooms come out, to kill the fungus outside before they start germinating. We use ten pounds of lime,—an excess of lime. We find that the lime does no hurt at all, but is of good value. We also use a half pound of Paris green, and fifty gallons of water. That is for the first spraying. Then two weeks later we spray again, and then in the second spray we use four pounds of sulphate of copper, ten pounds of lime, a half pound of Paris green and fifty gal-

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lons of water. The third and fourth time we use three pounds of sulphate of copper, 10 pounds of lime, one-half pound of Paris green and 50 gallons of water. In making this formula we have our chemicals analyzed before we use them. Have the copper analyzed to see what the copper contains, whether it contains too much iron or not, and see whether you are doing it right. Have the Paris green analyzed to see how much arsenic is in it. And one of the greatest things is the lime. We use the best lime we can get. Have the oil tested, too, before you start spraying with that, so as to know what the gravity of that is. We have found that we must have high pressure for spraying. But spray we must if we want good fruit. The spraying is the greatest trouble. Another thing we have always found out we gave up spraying too soon. I should keep on spraying later, especially for apples. Of course, pears we cannot spray very late, but apples we must spray late. I can remember the first spraying my father ever did. He had a little pump used in washing the wagons, and he had a man pump it, I remember, by hand. But even he had good results from that crude way of using the spray. If there are any questions you would like to ask me, I shall be glad to answer them if I can.

Mr. Charles Black: Did I understand Mr. Repp to say that he applied Paris green?

Mr. Repp: Yes, sir.

Mr. Charles Black: Is that any good before the growth starts?

Mr. Repp: Only for curculio.

Mr. Charles Black. But there is no curculio there.

Mr. Repp: I think you will find they are living on the leaves before the trees come up.

Mr. Charles Black: If I understand the nature of the curculio the bug comes out before, that is, just about the time they are blooming?

Mr. Repp: Do they not live on the leaves?

Mr. Charles Black: No, sir, I think not. There are no leaves to live on before the growth starts.

Mr. Repp: Before the bloom comes out. We spray just about when the leaves are the size of a mouse's ear.

Mr. Charles Black: I do not understand that the poison destroys the weevil at all. It is only the young bug that is destroyed when they are very small, like a codling moth. The curculio does not occupy the place the codling moth does. They stay right in the

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calyx, and the poison in going in there and coming in contact with them when the young grub hatches, it destroys the grub.

Mr. Repp: I always understood the curculio came on the leaves.

Mr. Charles Black: Not the curculio on apples but the codling moth, and that moth does not eat any vegetation whatever.

Mr. Repp: Is not that the curculio with that half moon effect on the apple?

Mr. Charles Black: Yes; the curculio does not do so much damage on apples as it does on pears. It has an influence on the seed, and the moth makes the apple bad. It may be that Mr. Dickerson, our assistant entomologist, can give us some information on that subject.

President Roberts: We would like to have some light on that subject, whether the curculio does harm to apples.

Mr. Dickerson: I think, from a practical standpoint, very likely Paris green is very little used in the first spraying. The first spraying is supposed merely to be for the fungous diseases and the Bordeaux and Paris green as a rule, even in the large sprayers in the west, are not used until we spray for codling moth.

Mr. Taylor: I think that was not quite the point we are trying to find out. Does the curculio live on the small leaf?

Mr. Dickerson: No, I should say not. Paris green may be used for the codling moth in the first spraying, if it is desired.

Mr. Repp: What causes the apples to have that half moon on them?

Mr. Dickerson: You mean the crescent-shaped mark?

Mr. Repp. Yes.

Mr. Dickerson: That is the curculio.

Mr. Repp: Where is that insect? Is it not living on the leaves in the spring of the year?

Mr. Dickerson: There might be a little there, but it does not do so much damage in this State.

Mr. Repp: If you had it grow on that apple, would it not damage it some?

Mr. Dickerson: Yes, on the apple. I have found it so. That is right, but we rarely spray for it on the apple.

Mr. Fraser: I did not get the cultivator that the speaker used. What was the type of drill?

Mr. Repp: We use the pivot wheel cultivator. We use the pivot wheel so that you can get up to the tree quicker and easier.

Mr. Charles Black: What time do you apply the fertilizer?

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Mr. Repp: We apply it before we plough in the spring.

Mr. Albert Hansell: Did you ever notice that the apples have rusted after using the Bordeaux?

Mr. Repp: Yes, sir, we have; it will burn the leaves right off the tree.

Mr. Hansell: I am afraid of it.

Mr. Repp: We are afraid too. We have found that in making this formula there is a good deal in making it. If you have it to curdle I would not put it on the tree on any condition. (Taking three glasses to illustrate). Suppose that is water there in that glass and this is copper and this is the tank. We put fresh water in the tank about half full, then we put the copper in the tank first, just leaving enough room for our lime water, then we put the lime water in last, being sure that our lime does not burn; if your lime will burn, then there is danger of burning the tree.

Mr. Black: Do you dilute either one before you put them in the tank?

Mr. Repp: No sir. We have the tank there with holes in it, and we run them in the holes, in barrels.

Mr. Charles Black: You said your last application was three pounds of copper, then you do not use so much lime?

Mr. Repp: We use ten pounds of lime. We keep all the lime on.

Mr. Charles Black: When I was at your place at one time I saw where you had somewhat discolored the Winesaps.

Mr. Repp: That was from using too much copper. We were using four pounds the last time, then; but now we have cut it to three.

Mr. Charles Black: Your father told you, did he not, that it affected the apple?

Mr. Repp: It affected the apple, but it has better keeping qualities.

Mr. Charles Black: That brown would not disappear later, would it?

Mr. Repp: The brown would not disappear, but I would rather have brown apples than rotten ones.

A Member: I do not understand the method you use in keeping the oil warmed up while you are spraying?

Mr. Repp: We have a steam pump, about six-horse power, and of course, we have a small boiler with it. Then we take a lead on it, and put a pipe from the boiler and put a hose on it, so we can run the hose with live steam right into the oil, and keep it so the steam

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will come off the oil before we use it, and keep it on as we get it on the trees.

A Member: That is crude petroleum?

Mr. Repp: That is crude petroleum.

A Member: I have been using that, and I do not believe we have ever had an insecticide so fatal as that is, but, still, it is not safe to recommend, because it is liable to kill the trees.

Mr. Repp: Yes sir, that is true. I have a good man to put at it. I have good men at the pump. I have given them the hose, given them the nozzle, and told them exactly how to put the oil on, and they go right through the farm. But they can kill every tree in putting it on. They see me put it on, and even then they go and kill the trees when they put it on.

President Roberts: Why do you use the potash in the shape of muriate of potash?

Mr. Repp: We get it in a commercial way. I have never seen the results we get from muriate of potash.

Mr. Charles Black: In putting the steam in the oil, does the condensed water do any harm?

Mr. Repp: No, sir. It goes to the bottom.

Mr. Charles Black: Then you spray that out first?

Mr. Repp: No, we do not use it.

Mr. Andrews: Is there not danger of refining the oil? Have you not refined oil, if you heat that, if you should send your light oil on the top?

Mr. Repp: We do not have it.

Mr. Andrews: Is not that very dangerous for a man to spray with?

Mr. Repp: I suppose there is danger, but it gives me practical results.

Mr. Andrews: If there is a frost going on, they are going to have trouble right off, the lighter oils coming up in the feeder is liable to blow them up.

Mr. Repp: I have never seen any danger. I would rather do it than to have them kill the tree with the oil if they put it on cold. I have never had any danger nor damage as much as I had from the scale.

Mr. Charles Black: I think it is not safe to use the crude oil.

Mr. Repp: Two years ago, when we started to use Paris Green, you know the trouble we had with it. You have to learn to use it, I think.

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Mr. Charles Black: I think the other oil is much safer.

Mr. Repp: I have never had any experience with it.

Mr. Charles Black: There is absolutely no danger of damage to the tree; but with crude oil, and especially when it is cold, if you get too much on, you are liable to damage the tree.

Mr. Repp: We have been using the oil for about six years.

Mr. Fraser: The title covered something about marketing. I wish Mr. Repp could cover that, because I am interested in it.

Mr. Repp: Of course, we market in one market at Philadelphia. We pack the fruit in hampers, and run it in cold storage, keeping it at a temperature of thirty-two, then taking it out and putting it in five-eighth baskets, and on the Philadelphia market. Of course, I am not in a commercial way, like some sections, where you have the barrel. I cannot give much account of marketing apples, because ours is local.

Mr. Charles Black: Are your apples covered with black where you only use commercial fertilizers?

Mr. Repp: We can see a vast difference this year. I had Prof. Baldwin down there when we had so much trouble, and located the varieties, and where we put on barnyard manure we could see each variety where we put it on.

Mr. Charles Black: From your experience, you think it not safe to use oleaginous manure on the Bartlett pear, do you?

Mr. Repp: I would not.

Mr. Charles Black: No, I would not either. If you try to force them with that they are all gone.

Mr. Repp: I want to make another remark about this. I am on a committee of the Apple Shippers' Association, for New Jersey, about the high German tariff that we have to pay after June thirtieth. The tariff now is fifty cents a barrel, and they are going to put on after June thirtieth, one dollar and sixty-five cents a barrel, and, I forget the amount on dried apples, but it is going to be double or more than that on dried apples. I think the agricultural people, and our apple buyers and growers should take an interest in this matter and try to work with our congressmen and have them take some action on this high duty we are going to pay Germany. Germany uses good fruit, paying a good price for it, and they consume a great deal of good fruit from the United States. They say Germany uses more dried apples than all the rest of the countries in the world put together, and the cores and skins are used there. No other section can use them. I think this Society ought to take

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some action on this matter. If we get into the apple growing right we can export them, and we are exporting them, and there is a fine field here for the new apple grower to go into growing apples for export. We have not the high freights that they have in Missouri, we are right here at seaboard, where they can be put on the boat and taken over there in good condition,—in a finer condition than they can get them from the Western grower, where it takes from two to three weeks in cars and laying in New York, while we can load them right on the steamer. I think this Association ought to take some action on it.

Mr. John S. Collins: I think Brother Repp ought to draw up a resolution.

Mr. Charles Black: Do you consign them right to the other side?

Mr. Repp: We sell them in Philadelphia.

Mr. Albert Hansell: Is that the famous Winesap?

Mr. Repp: This is the old Winesap. We used to think several years ago in growing the trees, they did not grow like the Winesap. But we have changed our mind. It is the old Winesap, just the same. Some of our neighbors had some of these old Winesaps and I had them to fertilize them, and when they had taken care of them they were the same old Winesap. I believe a good deal in fertilizing the blossoms more than I do the breeding place. I think fixing the blossom has more to do with it than selecting our scions from the nursery.

Mr. Charles Black: Have you ever tried these with ordinary storage? Winesap is a good keeper.

Mr. Repp: You do not have to worry about the Winesap.

Mr. Charles Black: Do they keep selling good? Do you think they may not?

Mr. Repp: No, one need not lose any sleep about the Winesap going. We can sell them in July, in June or in May.

Mr. Hale: Is that the average size you have in your hand?

Mr. Repp: That is about the average size. I went through and picked them right out without sorting. We have sixty acres out and we started to plant a hundred and thirty-five more. That is the faith we have in Winesap.

Mr. Brown: I would like to ask the speaker when he applies his green manure?

Mr. Repp: I said we did not use any green manure.

Mr. Brown: I know you said that, but you said in your experi-

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ence you find by using the green manure you were growing the wood at the expense of the bud?

Mr. Repp: We plowed it down. Crimson Clover we sowed and we plowed it down, and we had it under in the Spring just before it came in bloom. I never saw any such results from it, as we did not get fruit like we did with commercial fertilizer.

Mr. Brown: We are using green manure, but we sow it in July and let it lay over winter, then plow it early in the Spring and we get good results; but we have not had the experience Mr. Repp states here. My understanding is the recommendation here is the most expensive means of manuring the orchard, and, if there is any other method that is very much more economical that brings the same results, I think that is what the fruit growers want to know. I am sure we have in Delaware and the Maryland peninsula excellent results from green manure systems, which is a very much cheaper method than the one stated by Mr. Repp, and our conditions are almost identical.

Mr. Repp: I was West this year, buying apples. They believe in green crops out there. I asked one of the growers why they did not use fertilizers, and he said he was convinced that it was the right one to use and he would use it. He said he burned some brush and took the ashes and threw them around the trees, and did not have any green crops under that tree, and there was a vast difference where he used that, and he was going to use no more green crops. He found that with the fertilizer he secured a better color and more fruit, that is more fruit bearing surface on his trees.

Mr. Albert Hansell: Do you not think it is possible to have too much fruit on a tree?

Mr. Repp: We have to thin out.

Mr. Charles Black: Do I understand Mr. Repp advises everybody to grow Winesap apples?

Mr. Repp: Only on certain soils. I say, on gravelly, sandy soils.

Mr. Charles Black: He grows many others, Maiden's Blush and a good many other apples, and, while a few might make a success of growing Winesaps if they did as Mr. Repp has done, it would be bad policy for all the fruit growers of New Jersey to undertake it, and neglect the early and Fall fruit, which most of our growers get most money for.

Mr. Skillman: Mr. President, this is spreading out into a lengthy matter. Mr. Kerr is in the room.

President Roberts: What action will you take on this paper?

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Dr. Ward: I move that it be referred to the Executive Committee. Motion carried.

Mr. Repp: I move you that a Committee be appointed to draft a resolution on the German tariff.

This motion was duly seconded, and on a vote, carried.

President Roberts: I will appoint on that Committee: Mr. Albert Repp, Mr. John S. Collins, Mr. J. Lawrence Lippincott.

President Roberts: Mr. Kerr, of Delaware, will speak to us on "Market Fruits."

Mr. Kerr: I come from a better country than that; if you please, Mr. President, I am from Maryland.

President Roberts: That seems to be of that same Southern section.

Market Fruits

J. W. KERR, Denton, Maryland.

Mr. President and Members of the New Jersey State Horticultural Society:

I need not tell you I am glad to be here. There are some things in your Association that impress me, and did impress me very strongly yesterday; and one of those features was the fact that, in the capacity of census enumerator, I looked over your audience, and to my great surprise, I found that there was twenty-five per cent. of the audience that nature had decorated with her most honorable badge as veterans,—the white head. I belong to that regiment too. But it is very remarkable that there should be such a large proportion of your Society made up of the old veterans. It is certainly very gratifying to see that they have not tired of their labors. Another matter that lends interest to my trip here is the fact that the conditions as related to soil and atmosphere, in a large proportion of your State, are very similar to that of the Chesapeake and Delaware peninsula, and to drop down among fellow beings who are surrounded by similar environments and see what they are doing, and to meet with such encouragement as is emphasized by these exhibits, certainly is gratifying. I have felt that this audience was a good deal in the situation of an army. You have been shot at and shot at until you are getting pretty tired, and, I will not shoot off, I will get through as quickly as possible.

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Market Fruits.

All fruits that are sold in the market are not market fruits in the sense implied by the title of this paper. A definition of the term market fruits from the standpoint of commerce and prevailing horticultural practice, confines us to fruits such as are fitted by inherent qualities of adaptation to general field culture, as it affects the trees or plants themselves, and also the character of the fruit as relating to its size, color and shipping qualities. If appearances, after the fruit reaches the market, are inviting or attractive, the chances are largely in its favor for winning a place in public esteem as a market fruit. There is apparently so little accomplished by denunciations of inferiority in quality and flavor of some of the leading market fruits of to-day, that persistence in such attempts only recoils in the gloomy mockery of failure. After all, the success of failure in the growing of any fruit for market or any other purpose is largely dependent upon a single factor, with which size, color, adaptation or any other characteristic of the fruit itself are bereft of both connection and influence. And I would not expect any people in this big country of ours to name more promptly that factor than the fruit growers of New Jersey. To be fundamentally right, the man is a stupendous part of the condition upon which results, good or indifferent, are dependent. The man endowed with superior business acumen, if inclined to fruit growing, brings the higher grades of fruit into his service and succeeds in making profitable market fruits out of such. This peculiar type of man, however, is not so frequently found in this business as in some other avocations in life, and his operations cut a comparatively small figure in the enormous volume of fruit grown, marketed and consumed throughout the country. The brawny, tireless, hopeful high privates in fruit growing constitute the class that by force of circumstances are compelled to wrestle and puzzle with problems of the common school grade in their industrial aspirations. Such are the people who need market fruits as per the definition heretofore given;—such are the people that give to fruit-growing its ennobled standing among other great industries in the commerce of the country.

The fruits best adapted for market, as this is understood and practiced by the large majority, are the ones contemplated by this paper, and which are briefly discussed.

Beginning with the apple: The Yellow Transparent is the earliest ripening variety that meets our definition, and in localities

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where the culture of summer apples receives attention proves fairly remunerative to planters. The tree is not entirely acceptable, because of its tendency to twig blight; otherwise the variety is satisfactory and is assisting in disproving the ill-founded notion that for some time prevailed among growers,—that an apple must be red to attract buyers. The Red Astrachan is too critical in soil requirements; and largely on that account is being superseded by the Fourth of July, which has the advantage of a slightly earlier season of maturity and adapts itself to a greater variety of soils. The Early Ripe is undoubtedly the best all-round summer variety of market apples. The combination of market qualifications in tree and fruit out-ranks that of any other early apple. The fruit of this variety is uniformly smooth and a larger per cent. of it is marketable than of any other varieties of its season. It is not red, but it yields the profit per acre. Williams' Favorite in many localities twig-blights badly. Gravenstein, Oldenburg, etc., are varieties following in season, possessing more or less merit as market varieties, but are not included under our definition, neither are any of the great number of fall varieties, for they do not carry with them that reliability in trade demand that entitles to consideration here. Among the early winter varieties, the Grimes and Jonathan stand about on a par as to adaptation and commercial value, which is another demonstration of the fact that the "color line" in apples at least is more a myth than a reality. A variety that has by inherent merit reached a high standard of popularity as a market apple is the Stayman Winesap, which is adapted to successful and profitable culture throughout a large area. Rome Beauty, too, can safely be admitted under the restricting definition laid down. The old past-masters, such as Baldwin, Spy, King, Greening, etc., for more northern latitudes, are accepted as standard market fruits without question. And then there is the much maligned but irrepressible Ben Davis, the greatest mortgage lifter of the entire bunch, though now in many places yielding its proud position to the York Imperial, neither of which attained popularity because of superior quality. They are both red, however, which were it not for the green skin of the Albemarle pippin, that is making the Blue Ridge growers independent, might be regarded as the key to their high position in public esteem. The color of the old Roxbury—a variety that is still liked by a large number of sensible people—is not such as to excite that love for the beautiful so often alluded to in rhyme. To particularize all the apples that our definition might embrace would be an unpardon-

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able trespass upon the time and intelligence of this Society; hence a brief consideration of the situation as relates to market fruits in peaches is next in order.

While hundreds of varieties of peaches are grown for market,—that is, to sell—the whole number of reliably good and profitable kinds is not so extensive as nursery catalogues would lead us to believe. While marked changes have occured during the last thirty years in the list of varieties under cultivation, we still find some of the "old veterans" holding their own in popularity with the large majority of planters. The Mountain Rose, Reeves' Favorite, Oldmixon Free and Crawford's Late, may be classed as still within the borders of our definition, though to judge from the planting of the last few years, we are rapidly drifting toward the simplicity of a single variety of market peaches. In the whole history of peach growing, no one variety ever approached the wide-spread popularity of that product of Georgia—the Elberta. In this we have an ideal market fruit. The quality of the fruit itself has been criticised unjustly to a large extent. If left to reach full maturity on well cared for trees, it is the full equal of either Reeves' Favorite or Crawford's Late. Scores of varieties, described in most pleasing language, have been introduced during the last thirty years; most of them are now unknown to the public. None of the very early kinds are eligible as market fruits. And in a general way, kinds that ripen later than the standard of the Melocoton type possess no permanent or fixed reliability in crop development—a feature, however, that is strongly inclined and influenced by climatic conditions. Now, while it is a fact that there are dozens and dozens of varieties of peaches quite meritorious in one way or another, it is none the less a fact that it surely would be difficult to find a really successful peach grower who would desire more than *one* dozen varieties of the entire list for profitable market growing.

In pears, the Kieffer and Le Conte, owing to the sturdy independence,—deep-rooted and constitutional in the characteristics of tree,—as also by the ruta baga like indifference to abuse by the fruit, force themselves close to the head of the class, as market fruits. True, the fruit of neither one is fit to enter a civilized stomach—but, what are you going to do about it? They, like many other discomforting things, are here to stay. The prime object of growing fruit for market is not to improve the morals of the public, but to make a living and improve the financial condition of the grower. The Bartlett still holds its rank as a market fruit. The varieties of higher

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quality are planted here and there, but the largest number of people growing pears for market to-day, could not distinguish between the Anjou and Duchess by either the sense of sight or taste. The Orient has therefore done us a far-reaching turn with our pear growing. And has also broadened us a bit in our work in plums.

As evidence of the horticultural skill and ideals of those orange-hued people as relates to this fruit, the Red June, Abundance, Burbank, and Chabot, are admitted—to the outer area, at least—of the circle covered by the term, market fruits. These four varieties of pure Orientals are about all of that type that have advanced sufficiently in general favor to warrant mention in this paper. The list of varieties descended from our American species, that are entitled to recognition as market fruits is not a long one: starting with the Milton for first early, followed with the Wildgoose, embraces about all that the commercial grower can safely venture on. These, of course, would be wholly valueless if unaided by effective pollenating kinds, such as Smiley, Newman, etc. Localities where these varieties are not sufficiently hardy to withstand the winters, by force of such unfavorable conditions, are compelled to look to the thick-skinned Americana species for their fruit,—a type that our Eastern markets do not regard with the least degree of kindliness; hence, none of the varieties of this group can be admitted as market fruits with us. The same situation obtains with the Wayland type: There are a few varieties in this group that possess much value as family fruits, rivaling that old family favorite, the Damson, for appetizing excellence—after subjection to the usual culinary manipulations; and in point of reliable productiveness, comparison would result in mathematical delusion; but with these strong points as obstinate facts in their support, they have not yet had their first degree in the elect lodge of market fruits. The very restricted areas in which the European type is successful, renders them ineligible to admission. None of the many hybrid varieties disseminated could be placed on the list of market fruits—democratically considered—without doing violence to conservatism in suggestion. Dozens of these, however, are exceedingly fine fruits for the family fruit garden.

The market supplies of Eastern grown cherries indicate extreme poverty in assortment of varieties measuring up to market fruit standard. The old Black Tartarian, among the Hearts, has held its own against all comers, while the Gov. Wood and Graffion are still favorites in the Bigarrean class. The Early Richmond and Montmorency divide honors in the Dukeo or Morello type. So

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many varieties of the really choice cherries are such an easy prey to trunk blight, or sun scald, that efforts at orchard culture of them yield only discouraging disappointment. The fastidiousness of the trees as relates to soil condition and situation greatly restricts culture. This peculiarity or delicacy is far less prevalent among the "Dukes" and for this reason the bulk of our market operations with this fruit is confined to what may be truthfully called an apology for cherries.

When we enter the domain of small fruits and consider them under the strict construction adhered to with the tree fruits, the labor is at once greatly abridged and simplified. Take the strawberry, for example—if the hundreds of varieties originated, planted more or less for a brief period, and the fruit thereof placed upon the market, constituted them market fruits, to know and identfy what is what, and why, would simply be a nightmare of confusing theory. The real market varieties of the strawberry, however, do not reach the proportions of a dozen kinds in any given locality. Take the old Wilson Albany as the progenitor of the true type of market kinds, judge the list of the present day by that standard, and how many are there to tie to? How many kinds have we to-day possessing the rugged adaptability to soils and situations that marked the Crescent as a market fruit, or even the Tennessee? It is not disputed that there are plenty—entirely too many—varieties of fruit to experiment with for market purposes, but when we touch the zero of truthful and practical facts concerning the subject of "market fruits" we are not nearly as rich in assortment of varieties as a cursory view of the situation would lead us to suppose.

What have we in the line of red raspberries that can be conscientiously recommended to the rank and file of fruit growers as a market fruit? The expert who may be tormented with a desire to present a favorable reply to this query will act wisely by thinking twice and then preserving that silence which is said to be golden.

In blackberries the conditions are less strained, though it is regrettable that we have to splice out our wants in this fruit with a plant so ungovernably persistent as the trailing Lucretia. In gooseberries we have been experimenting with all the improvements (?) in the way of market varieties, but where fair returns at least expense govern, the Old Houghton is still accorded first place as a market fruit—if a Christian can within the bounds of decent morals call a green gooseberry a fruit.

With grapes, suppose with all our hybridizing, or creating, if you

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prefer, we were to eliminate the Labruscas, where would the grape growing industry stand? To be less violent in hypothesis, suppose we were simply to eliminate the Concord? Why, we would be on the ragged edge of a grape famine at once.

The fact boldly confronts us that the general wants of the fruit-consuming public are mainly supplied by a very short list of varieties in each class. These are our real market fruits. The acme of excellence in quality of almost every class of fruit is partial to such varieties as demand a higher grade of intelligently directed skill—a more refined order of art to produce successfully than is acquired in the great Common School of Fruit Growing, to which the masses are compelled to look for their supplies. The situation is the more singular for the reason that in the collegiate realm the tension of competition is much less strained than is noticeable in the lower grades.

President Roberts: The subject is now open for discussion, and Mr. Kerr will stand here ready to answer any questions.

Mr. Albert Hansell: I would like to ask why he does not put William's Red higher in his list for a good apple, he puts the Fourth of July and Early Red so far ahead of that.

Mr. Kerr: I was discussing it simply from the point of the market fruit, and not from the standpoint of the beauty of the fruit or trees of either the William's Red or the William's Favorite as it is sometimes called.

Mr. Albert Hansell: They are two different apples entirely. I have seen both of the trees and had the fruit, and they are different. One is a striped apple and the other is a blood red apple. One is an apple of a rather sweetish flavor and the other is tart.

Mr. Kerr: If you had the William's Red as described by Downing, and were given the William's Favorite, as a synonym, I think it would convince you very quickly.

Mr. Hansell: I have seen the trees.

Mr. Kerr: You have seen the trees under certain conditions.

Mr. Hansell: They were trees within forty feet of each other. The William's Favorite is an old apple, gone almost entirely out, it would be almost impossible to find one in Burlington County today. They are a very shy bearer, are a striped apple, a very good, and in fact, a delicious apple. The William's Red is an entirely different apple.

Mr. Kerr: You may have some local variety grown under the name of the William's Favorite, but pomologically speaking, the

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William's Favorite is synonymous with the William's Red. We will have to adhere to that because it is handed down to us by the best authorities in America. The William's Red in a great many situations is very defective as a tree, and very much inclined to twig blight.

Mr. Hansell: It does not do it with us.

Mr. Kerr: There are hundreds of varieties here and there, as were pointed out by Mr. Hiester yesterday. A very important point right there with special localities, and special places and all that sort of thing, is to determine by actual experience what will succeed there. But this paper has nothing to do with special varieties adapted to special localities. I was simply discussing the market varieties as they presented themselves to the fruit consumer and the fruit growing public of the country.

Mr. Hansell: I was trying to find out why you did it, that is all.

Mr. Charles Black: The William's Early Red is one variety. They are growing it and taking care of it in Delaware and it is grown through New Jersey and Massachusetts, and is one of our most popular apples. The William's Favorite is not a local variety. It is sent out by our nurserymen when they have William's Favorite, and when you buy it, you do not get William's Early Red. It does not make any difference what time you get it. You class Jonathan and Grimes' Golden, as early winter apples. Are they not fall apples?

Mr. Kerr: It depends upon where you go.

President Roberts: Do you mean that sometimes the Grimes' Golden will keep for the winter?

Mr. Kerr: Yes, sir.

President Roberts: For me they do not. The Smith's Cider ordinarily will keep until March without any cold storage whatever.

Mr. Charles Black: The Grimes' Golden, it ripens in the last of September and October here.

Mr. Kerr: A winter apple is an apple in the market point of view, that is sold in the winter, and the Grimes' Golden and Jonathan are not sold in the summer.

Mr. Charles Black: No, not in the Summer, but they are sold in the Fall, and they are put there as Winter apples, but here in New Jersey we take them the same as the Williams.

Mr. Kerr: You are looking at it now from the growers' standpoint. The paper was discussing market fruit.

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Mr. Charles Black: Not every grower has a fruit store, and we do not term those apples winter apples.

Mr. Kerr: If the grower is not situated to grow that kind he had better grow something else.

Mr. Charles Black: There is the Fall Pippin here and the Bellefleur; here is the Early Fall apple that will keep until the winter.

Mr. Hansell: I would like to tell the gentleman that I have some William's Red trees set out in 1854.

Mr. Kerr: In your particular locality you may be especially adapted for that tree, and perhaps you need not go more than a mile from your location and you will find the reverse of that case. So that taking it as the general market variety it will not come under that definition.

Mr. Charles Black: Mr. Hansell, you have grown the William's Early Red for a great many years, have you ever found it subject to twig blight?

Mr. Hansell: No, sir.

Mr. Charles Black: You said it was subject to that in Delaware?

A Member: I would like to ask what are the best varieties of strawberries?

Mr. Kerr: That would depend upon the section, I suppose I think more of the Tennessee and Gandy than any other varieties.

President Roberts: Mr. Kerr spoke of the William's Favorite apple, and a good many of us will have to support Mr. Kerr. He not only has the backing of Charles Downing and a good many of us, but the later fruit books, the Gould Fruit Book, published five years ago, gives that as synonymous, and a great many of us are inclined to believe that the William's Favorite raised here is an apple produced by mistake and put out under that name. Mr. Kerr has kindly acted as judge of our fruits; he has his report ready and we will be pleased to hear it at this time.

Mr. DeCamp: I move that the address of Mr. Kerr be accepted, with the thanks of this Society, before we go into this other matter. Motion carried.

President Roberts: We will now hear from Mr. Kerr his report as judge of the fruit.

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Report of Committee on Display of Fruit.

J. W. KERR, Denton, Maryland.

Mr. President:—Your committee on awards have examined the the exhibits and respectfully submit the following report:

For the best exhibits of apples from outside the State, a first prize is awarded to R. M. Richardson of Wyoming, Delaware, for a very meritorious and generous sample of Stayman Winesap.

For the best exhibits of pears from outside the State, a first prize is awarded to H. G. Harrison of Berlin, Maryland, for a fine display of Kieffer.

Honorable mention is due George W. Gould of Montclair, N. J., and R. P. Lovett of Falsington, Pa., for exhibits of celery.

Your committee feels it due the exhibitors to state that most of the exhibits are exceptionally fine representatives of the skill, enterprize, and loyal devotion to the noble calling of fruit growing by the New Jersey horticulturist.

(List of premiums awarded, printed below.)

APPLES.	FIRST PREMIUM.	SECOND PREMIUM.
Gilliflower, ...	S. A. Miller.	
Snow, ...	S. A. Miller.	
Fall Pippin, ...	S. A. Miller.	
Canfield, ...	S. A. Miller.	
Rhode Island Greening,.	S. A. Miller.	
Colvert, ...	S. A. Miller.	
King, ...	S. A. Miller.	
Kaign, ...	S. A. Miller.	
Baldwin, ...	S. A. Miller.	Lemuel Black.
Northern Spy, ...	S. A. Miller.	Albert Repp.
Pound Sweet, ...	S. A. Miller.	
Cooper's Market, ...	W. H. Skillman.	S. A. Miller.
Minch, ...	Albert Repp.	
Yellow Bellflower, ...	Lemuel Black.	Albert Repp.
Smith's Cider, ...	Albert Repp.	F. W. Cruser.
Winesap, ...	Albert Repp.	Lemuel Black.
Smokehouse, ...	Lemuel Black.	
Roxbury, ...	Lemuel Black.	
Twenty-Ounce Pippin, .	Lemuel Black.	
Nero, ...	Lemuel Black.	
Spitzenburgh Esopus, ..	Lemuel Black.	

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Apples.	First Premium.	Second Premium.
Lillie of Kent, ...	Lemuel Black.	
Del. Red Winter, ...	Lemuel Black.	
Moore's Sweet, ...	W. H. Skillman.	Lemuel Black.
Commerce, ...	W. H. Skillman.	
Stark, ...	W. H. Skillman.	
Ortley, ...	W. H. Skillman.	
Wealthy, ...	W. H. Skillman.	
Hubbardston Nonesuch,.	W. H. Skillman.	
Lankford, ...	W. H. Skillman.	
Delicious, ...	W. H. Skillman.	
Dickinson, ...	C. L. Andrews.	
Arkansas Black, ...	C. L. Andrews.	
White Ohio Pippin, ...	C. L. Andrews.	
York Imperial, ...	C. L. Andrews.	W. H. Reid.
Mammoth Black Twig,.	C. L. Andrews.	W. H. Morgan.
Stayman Winesap, ...	C. L. Andrews.	
Ben Davis, ...	W. H. Reid.	C. L. Andrews.
Rome Beauty, ...	W. H. Morgan.	C. L. Andrews.
Peck's Pleasant, ...	W. H. Reid.	
Willow Twig, ...	F. W. Cruser.	
Newtown Pippin, ...	F. W. Cruser.	C. H. Servis.

Pears.	First Premium.	Second Premium.
Vermont Beauty, ...	W. H. Skillman.	Albert Repp.
Worden Seckel, ...	W. H. Skillman.	
Garber, ...	W. H. Skillman.	
Le Conte, ...	W. H. Skillman.	
Bartlett, ...	Albert Repp.	
Lawrence, ...	Albert Repp.	Lemuel Black.
Duchesse, ...	Albert Repp.	Lemuel Black.
Kieffer, ...	Lemuel Black.	

Quinces.	First Premium.	Second Premium.
Orange, ...	W. H. Morgan.	
Champion, ...	W. H. Morgan.	

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Miscellaneous.	First Premium.	Second Premium.
Canned Fruit, ...	Mrs. Lemuel Black.	
Display of Violets, ...	Charles Black.	
Display of Carnations,..	Charles Black.	

Report of Committee on Display of Flowers.

Dr. Walter Van Fleet, Chairman.

For a bunch of 100 very fine Lady Campbell violets the first prize is awarded to Charles Black.

For the best display of Carnations, twenty-four blooms, the first prize is awarded to Charles Black. Special mention is made of a new variety exhibited—Carnation Gorgeous.

President Roberts: We are all deeply indebted to Mr. Kerr for what he has done for us. What action will you take on the report?

Dr. Ward: I move that the report be adopted, and referred to the Executive Committee. Motion carried.

President Roberts: We will now listen to a paper on "Melon Growing" by Joseph Barton of Marlton, N. J.

Melon Growing.

Joseph Barton, Marlton, N. J.

Mr. President, Ladies and Gentlemen of the Horticultural Society:

When I was asked by the Secretary to speak on vegetable growing in South Jersey, on thinking the matter over, I thought possibly there were no vegetables in which the people were as much interested and desirous of hearing about as cantaloupes, melons and produce of that kind. But the blight has come in the last five or six years, and it has put out all the smaller growers, men who will not keep up and bear it. It is discouraging in one sense, and, in another sense, it is encouraging. The conditions in the market for the last few years have certainly been far in excess of what we used to have a few years ago, as I remember it. I have prepared a short paper, practically giving our methods. There is nothing new in it, and nothing especially important.

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There is probably no crop grown throughout Jersey which has come to be considered by truckers as uncertain as have cantaloupes and melons. Indeed, so general is this opinion, that, during the last decade, the acreage has materially decreased, causing a corresponding increase in prices. This state of discouragement is due directly to the blight which has become practically a certainty. Now, this condition of affairs makes melon culture a live subject. We are assured a good market at greatly increased prices, while, on the other hand, we are confronted by a situation attended by increased uncertainties, a situation which has not yet been successfully coped with, but, one where the chances of success are sufficient to warrant a trial.

Under present conditions, the man who does grow a crop of cantaloupes or melons is sure of a wide margin of profit. Because of the above facts, there are a few points which become, if possible, doubly essential.

In the first place, in coping with these hard conditions, heavy fertilizing and the resulting vigorous growth is a large asset. Also thorough attention all along the line, and especially in the matter of cultivation, is exceedingly effective in increasing resistant power. These fungous diseases never come in South Jersey until about August fifteenth, consequently early planting often secures the maturing of the crop before they make their appearance. Therefore, in planting cantaloupes, where earliness is an object, and personally I think the chances much better on the early crop, the seed should be planted as soon as the ground is at all fit, usually before the middle of April, governed of course by weather conditions rather than the date of the month.

After plowing and thorough harrowing, the rows are made up east and west, a ridge being thrown up about ten inches to a foot high. Before planting, the seed are soaked for twelve hours in water, heated to about one hundred degrees Fahr. The water is then poured off and they are put in a warm place for twelve hours more, at a temperature of a hundred degrees. At the end of that time they will probably be sprouted slightly, just so you can see the tip. These seed are then mixed, quart for quart with dry seed. Now, in planting, make an opening in the south side of the ridge, with the toe, level with the surface of the ground, being careful not to break the centre of the ridge. Then plant the mixed seed, and cover with the foot, the toe being so elevated as to leave a sloping surface to the south. We have obtained by this method practically

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two plantings in one, in the wet and dry seed, and, again, by covering on the slant, we have our seed at varying depths. Thus in cold wet weather, when the deeply planted ones rot, the shallow ones will come, while under dry hot conditions, when the shallow ones dry out, the deeper ones will come up. Again, by leaving the ridge unbroken on the north, the protection from the cold winds oftentimes means the saving of the plants. I have seen the ground frozen to the extent of being crusted on the north side of the ridge, while the plant down under the south side has remained uninjured. Thus a stand is practically assured by one planting. Experience shows that replanting may in a great measure be done away with, and we have secured an early regular start. If you are endeavoring to grow early crops, there is a great point in this, that the ridge be made up east and west for many reasons; as I say, it breaks the north winds, and also the sun not being very far north at that time, hits that sloping southern surface almost perpendicularly, and there is a large amount of heat stored up there to keep the melon over the night, and I think in more instances than one, that has saved plants that we would otherwise have lost.

In the matter of fertilizing melons and cantaloupes, they require plenty of nitrogen. Our method is to broadcast, with about one thousand pounds of muriate of potash and South Carolina rock, mixed one of potash to four of rock, then in the row a liberal application of fish scrap or some other goods running high in nitrogen. An application of some form of ammonia, some quick acting material, made once or twice during the season, just before cultivating, will be found to be a practical treatment and one giving good returns. In the row we drill in all we think is safe without any danger of burning the young plants, the rows being five feet apart or more. Sometimes we do not get a very heavy application, but we want to put there all we think is safe.

Probably no crop we grow responds more fully to thorough frequent cultivation than do cantaloupes and melons. In the early stage of growth this is especially true. The first hoeing should be done as soon as the plants are well above ground, and involves careful tedious labor. The hoeings must be continued at regular intervals until about July 1st. When the vines are from one to two feet long, we always turn them and cultivate thoroughly. After this last cultivating, sowing clover seed will usually secure a good cover crop for winter. The truckers in the trucking districts do not all do that cultivating: they cultivate as far as they can until the

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vines get out and let it go. But we believe the last cultivating, expensive as it is, involving the turning of those heavy vines, pays thoroughly well. It costs like everything to string out a gang of twenty men on ten or fifteen acres and keep them there three or four days. I have seen it done when the ground has been dry, and the vines wilted so much so that it would stop part of them growing, and, yet, in the long run, that part lasted longer than the others, especially if the weather conditions have been severe at all.

There are not any of our truck crops which have more insect and fungous enemies than do cantaloupes and melons. Eternal vigilance and untiring energy are the price of success. Beginning with the cut worm, which is a menace to the young plants when they first come through the ground, and ending with the blight of late summer, a continuous fight is necessary. Cut worms may be successfully controlled by throwing wheat bran and Paris green around each plant. Put just enough Paris green in the bran to show a greenish tinge, dampen and use. This is a very practical and efficient remedy. Probably the striped beetle, known as the Squash Bug, requires as close attention as any other pest. They will entirely destroy a plant in a few hours under favorable weather conditions. They work by sucking the juice from the plants and not by eating, consequently it is impossible to poison them. The most effective means of combating them we have ever found is to throw ground fish scrap around the hill. This drives them off not only for the moment, but every time it is wet it becomes more offensive to them.

Poison does not seem to have any effect on those fellows. They are very hard shell, and poison by contact does not affect them either, the only thing to do is to disgust them, as nearly as we have found, and the fish scrap does that. I really think it becomes more and more offensive the longer it stays, so that you have there a remedy, and then by the same process are pushing the young plants.

The melon louse, occasionally very destructive, can be controlled by fumigating with carbon bisulphide. This process is expensive, tedious and only practical when taken in the very beginning. By a careful daily watch which will insure the discovery of the lice as soon as the first appear, it is possible to keep them in check. Some years ago the lemon louse was as discouraging to the ordinary grower as blight, and many people gave it up on that account, and after two or three years we made a practice of walking our field over every morning. Any eye that is used to it can tell the first louse several rows away taking four or five rows across. We go over it and

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watch it and weed it out with this carbonized sulphur water. But if they once get hold that don't amount to anything.

When we come to consider melon blight, experience teaches such a varied lesson that it seems hard to say much. Bordeaux mixture is supposed to control this fungus but results have not been the most encouraging. For two years we sprayed extensively. The first year with some success, although our vines eventually died with blight. The second year the results were so indefinite that they practically resulted in nothing. A late field of cucumbers was thoroughly sprayed. The growth was very rank and it promised great returns, but the vines all died in a few days' time from blight. Last season we grew an early crop of cantaloupes without spraying and realized nicely from them. Thus, as I said, before, spraying has not been very satisfying, yet there seems little doubt but that Bordeaux will control this form of fungous disease to a great extent. That the blight will come is a certainty. We must make some effort to overcome it, either by spraying or growing an early crop.

I know of no crop which requires more care in picking and handling, and very few as much as do cantaloupes. They must be picked every day. The condition in which they are picked must depend entirely upon where they are to be shipped to. Those for the nearby market should peel from the stem upon gentle pressure, while those for long distance shipping must be forced out green. The picking of green shipping stock is a difficult task to accomplish with ordinary help. It requires an experienced eye to determine the cantaloupe which will ripen in two days' time and not to pick the one which will not be ready for a week. But picking green is satisfactory in that you avoid practically all waste, by no means a small consideration. In the southern end of the state we use the upright basket which is not a very satisfactory package. Packing is an important feature of the work. It is difficult to pack so as to insure a full basket when delivered. The melon crate is a greatly superior package for many reasons. In the first place it necessitates regular size of melons, and secondly because it insures an uniform package,—a package which the dealer knows accurately. But, no matter what is used, the paramount consideration should be to make it a straight packed, sound, honest package, one which will bring back trade.

The two varieties grown in our end of the state are the various improved strains of the old Jenny Lind and the newer Rocky Ford. The first mentioned has much to recommend it. The quality is good, a strong grower and good yielder. The Rocky Ford is also good

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quality, a good grower and yielder, but a far better shipper than the Jenny Lind type, and is being grown quite extensively in this part of the country. The market is beginning to demand a smaller cantaloupe and the Rocky Ford seems to meet this requirement. And I am ready to predict that it will supplant the Jenny Lind in the near future. But, whatever strain is used, we must not lose sight of the importance of the careful, accurate saving of seed. The saving of seed with some definite type in view. It is quite possible and easy to eliminate any objectionable feature in two or three years by careful saving of seed. The same facts apply to plant breeding as to stock breeding. Like begets like. I want to emphasize this point. Do not think of buying your seed year after year from seed firms, but rather save your own intelligently and know what you are planting. I have gone over these features of interest in the subject, and will answer any questions that are asked.

Mr. Charles Black: Do you find the Rocky Ford is the old Netted Gem?

Mr. Barton: That cantaloupe, the Gobin Gem they used to call it in our part of the country, was a larger cantaloupe. It is the same general type.

Mr. Charles Black: I do not see any difference.

Mr. Barton: I beg to differ with you. They are different. It is not absolutely the same cantaloupe. Of course, it is the same general type. There is another interesting fact. Prof. Weston last Spring sent us a package of seed that had been sent him from Colorado, the home of the Rocky Ford. They were supposed to have a resistant power to rust, it had been bred in them, and the plants had been out in the Fall and did not blight; we planted them last year, but the weather conditions were so exceedingly wet that the results were indefinite. I would be inclined to think they did stand up considerably longer. I cannot say anything definite on account of the adverse weather conditions. But we had six seed of one kind sent to us and fifteen or twenty of another, and from that we succeeded in getting about three quarts and we are going to give it a fair trial this year.

Mr. Charles Black: Would you consider it good practice to save your seed from blighted melons?

Mr. Barton: You are most assuredly not increasing the resistant powers of that melon.

Mr. Charles Black: You do not broadcast your soil with stable manure?

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Mr. Barton: No, we do not use any stable manure except what is made on the place, we do not buy it.

Mr. Charles Black: Did you ever try Peruvian Guano?

Mr. Barton: Yes, my father did. We have not tried Peruvian Guano since I have been there, but fish Guano is something of the same sort, not so fine, and that is what we use.

Mr. Charles Black: What is the character of your soil?

Mr. Barton: It is soft Jersey sandy loam.

Mr. Charles Black: You do not use any crops on there?

Mr. Barton: Yes, we use green crops, of course, all we can get out of it.

A Member: How about saving seed from cracked melons?

Mr. Barton: We never do. Our greatest fault with the old fashioned Jenny Lind is it gets a little thin on the end, and that is right where it is going to be soft, and that is packed green and will be soft when it ripens. That is the cantaloupe that knocks one out in the shipping trade.

A Member: You speak of the difficulty of packing the fruit, or picking the fruit and shipping a long distance, have you had any satisfaction in shipping fruit of that kind, or have you shipped them?

Mr. Barton: Yes, we have. Going back four or five years ago, I forget just the date, we picked a whole crate that went as far west as through the towns of Ohio, and I think some of them to Chicago. That was exceedingly satisfactory, there was not any complaint coming. But the next year the market conditions were slightly different and knocked us out.

A Member: I had some talk with a very prominent shipper of Swedesboro, named Headley, who made a very extensive practice of shipping cantaloupes, and he says he can ship large quantities of that fruit and they do not get in a bad condition.

Mr. Barton: There are times when we can ship everything we can get our hands on.

A Member: They are now shipping all over the country the fruit the same as you haul to Philadelphia and they cannot begin to supply the demand.

Mr. Barton: I think that is so and they get good prices.

Mr. Hendrickson: I would like to say in regard to the picking of cantaloupes, I have been interested in that especially, as that is my specialty. I do not want any impression to get out from here that

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we are going to get good quality of cantaloupe if we pick them before the vine slips it.

Mr. Barton: It must slip. There were some I have shipped to Buffalo and had them keep for one week after they were picked. I have had complaints from the New York market because they said they were too green when they were picked. I have had them in my cellar for a week or ten days and they were perfectly solid. But you get the flavor in the very last growth of the melon. That is true of any fruit.

A Member: I would like to ask in regard to the fertilizer, what you use?

Mr. Barton: We have used ground fish scrap, about ten per cent. scrap.

A Member: That alone?

Mr. Barton: That alone, in the row. And the potash and South Carolina Rock broadcast. I think if you use much South Carolina Rock you had better use plenty of lime. We have had some trouble with that.

A Member: Have you had much experience in the use of well rotted manure, right in the row?

Mr. Barton: About as long as I remember growing cantaloupes, when I first came here, that was our process, followed out both ways, and we put it right in the hole or in the row. Then it was all right. It is a matter of cheaper handling. But we use commercial fertilizers, and it is a question in my mind whether it would not be possible to reduce the blight more by that method.

A Member: Did you have much blight this year?

Mr. Barton: Yes, but we practically picked the fruit before the blight came. The last few pickings the blight started.

A Member: A grower of citron told us that if a citron was picked before it was fully matured that it could be kept until the next year, do you believe that?

Mr. Barton: If the citron were not actually matured, the plant would be a weaker plant, that is all I can say of that. I think that probably would have that effect, it will make a weaker strain and in time it would put him out of business.

A Member: It is generally supposed that you get the best effect in the seeds when it has been matured.

Mr. Barton: That is my opinion of it. I do not like the seed of blighted stock, for that reason.

Mr. Lovett: I would like to ask if you have ever used Nitrate of

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Soda to make the crop mature earlier, and hence get the crop matured before the blight appears.

Mr. Barton: We have used some. Nitrate of Soda requires a whole lot of care to use it around a cantaloupe. We would not care to recommend it.

Mr. Lovett: I understand, of course, you have to use it judiciously, but do you not find that your crop will mature earlier, and be a better one?

Mr. Barton: I think it would, but I do not know as I have observed it.

A Member: Did you ever plant cucumber vines the same as muskmelons, preparing the seed in the same way?

Mr. Barton: Much the same as we did cantaloupes that is, soaking the seed?

A Member: Yes?

Mr. Barton: Yes; that holds good for any early seed you want to use. The point is you can gain as much in twenty-four hours in the house or in some warm place as you can in a week in the early Spring.

Mr. Charles Black: Do you not find that soaking the seed, if there comes a period of rain it will rot frequently, that is if the rain comes directly onto it soon after it is planted?

Mr. Barton: Yes; that is the point, let it go, for then you have the dry seed. Whereas, if it happens to be a dry time, the wet seed will sprout and the dry seed will not sprout.

Mr. Charles Black: Would you not say that outside of the expense, stable manure is just as good?

Mr. Barton: I do not know that I would. We have grown just as good crops in using commercial fertilizers, using chemicals and following the thing up as we go along.

A Member: How far apart do you plant?

Mr. Barton: If we do not plant anything between them, we plant them five by four.

Mr. Black: Not the water melon?

Mr. Barton: Oh, no, the water melon about ten feet on the square, eight feet one way and ten the other way. They are mostly running in orchards now.

A Member: I would like to ask what the rotation is for those crops? Can you follow this vine crop with a vine crop in succession?

Mr. Barton: We have to, if we keep in the business. Our

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ground is getting pretty well eaten up with orchards, and we are doing just that thing. I think it is not advisable. I think you stand more of a chance of having blight than you would on clean ground, but we are going to give it a trial. I have seen watermelons on the same ground grown for three years anyway in succession, and the last crop was better than the first. I think that all depends upon whether you put back what the plant wants.

Mr. Charles Black: What do you have reference to by the striped bug, the little small striped beetle or the large one?

Mr. Barton: I have reference to a little small one, known as what we call the Squash Bug.

Mr. Charles Black: I have had long experience with him and I never could get anything to drive him away, except lamp plaster with a very small amount of Paris green and when they see that they go.

Mr. Barton: A little lamp plaster with Paris green or kerosene oil has been used a good deal, and there is no objection to that, but I always thought that you had to go over it time and again and put on other lamp plaster, and that it would kill the buds of the plant and the rain would not wash it off. The fish you see does not do that, and again you get the benefit to the plant without any expense.

Mr. Charles Black: That is the only method I could conceive of.

Mr. Barton: We have conceived that with fish. You must be sure that it is not acidulated fish, scraped under treatment by acid, or else you will get rid of your plants as well as your bugs.

President Roberts: I will have to call a halt on this discussion, interesting as it is. Although Mr. Barton is a very successful grower of cantaloupes, his first love is peaches, and we are deeply indebted to him for coming and speaking to us on this subject. What action will you take on this paper?

On motion it was voted that it be referred to the Executive Committee.

President Roberts: A few years ago, this Society took part in a display given in Horticultural Hall in Philadelphia by the American Pomological Society. At that time they awarded our Jersey exhibit a medal. It is a matter of an honorable offering given by the American Pomological Society. It will be on the table in charge of the Secretary and anyone who wishes to may inspect it. We will now adjourn to meet again at 1.30 this afternoon.

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SECOND DAY—AFTERNOON SESSION.

Question: Has anyone had experience in transplanting apple trees 20 years old?

Mr. Hale: No doubt it could be done, but it would cost about $40 per tree.

Mr. Lovett: I have never had any experience in transplanting apple trees, but I have in deciduous shade trees and also evergreens, but I think Mr. Hale's estimate of the cost of moving an apple tree is too high, that is, if you move them in quantities. We get for moving the large trees in quantities, from six to twenty dollars, or say trees about 18 inches in diameter we probably get from $35 to $40 a tree, but then you have to consider they are taken a long distance. I would be willing to have the contract for moving anywhere from a hundred to a thousand apple trees, not over 8 inches in caliper at $12, and I think I could do it for $10; in fact, I would be willing to give a forfeiture for any tree that died.

Mr. Hale: I think that estimate did not allow the tree to grow much in 20 years; I think I have seen them that size in three or four.

Question: Name the best five commercial varieties of apples for Monmouth County to furnish a succession.

A Member: They grow the English Codlin, the Nyack Pippin, Gravenstein, the Duchess, and quite a considerable quantity of the Wealthy. There are not many in Monmouth County who grow winter apples.

Mr. Reid: Does that mean succession for the whole season?

President Roberts: Yes, to furnish a succession.

Mr. Reid: From our own experience we do better with the early apples than with the later ones, the English Codlin and the Gravenstein do very well. The Ben Davis we all know will hold its own. We do very well with the Pelican. For early apples I would say the Nyack, the Gravenstein, the English Codlin, and the Duchess.

Question: Name the five best peaches for the same district.

President Roberts: We will have to call upon Mr. Reid again.

Mr. Reid: As I am no authority on peaches I hardly know what to say. I have neighbors who do well with the Elberta, the Carman and the Iron Mountain.

Mr. Black: I am not very familiar with the varieties grown in Monmouth County, but there is a considerable quantity of the Iron

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Mountain. I have sold several lots of trees there; they plant them out in rows. I should say the Crawford's Late, the Fox Seedling, the Elberta, and of course, there are good many other varieties, but those are planted largely there.

Question: What is the best formula for a fertilizer to use on an apple orchard 20 years old? How much per acre should be used?

Mr. Black: That depends largely on the soil. If I can not buy stable manure I want to sow cow peas or crimson clover and then use Muriate of Potash.

President Roberts: Would you rather have the Muriate of Potash than the Kanit?

Mr. Black: Yes. I see my friend, Mr. Baird, down there has an apple orchard on very light, sandy soil on which he has been sowing very large cow peas for several years. Two years ago he had the finest crop of English Codlins and some other early varieties that I have ever seen.

Question: What is the best formula for a fertilizer to use on Kieffer pears 20 years old, and how much per acre?

Mr. Black: I think the best thing for a man to do with a 20 year old Kieffer pear orchard is to cut it down and plant a young one. I would not bother fertilizing one. The fruit grows small and rusty, and even if you cut it off and renew it and make it vigorous again, the fruit is not smooth, it is knotty and deformed, and very often rusty. I would not bother my time with a 20 years old orchard.

Mr. Skillman: If a Kieffer pear tree is having proper pruning and is kept in condition, when it gets to be 20 years old we will not have so much of this over-bearing and rusty fruit. I think a large part of that rustiness is caused by this using up the early vitality of the tree.

President Roberts: What fertilizer would you recommend?

Mr. Skillman: Anything that is the handiest and cheapest.

Mr. Black: Mr. Skillman has not any 20 years old, for he would cut them down.

Mr. Skillman: I have them 15 and 16 years old.

Dr. Ward: I have Kieffer pear trees 20 years old, and I have used the knife on them and they are all right; they are in good shape, and last year I got as good fruit as the trees ever bore.

Mr. Black: There are exceptions to everything, but if you will look at the 20 years old trees in this country, you will agree with me that they should be cut down.

Dr. Ward: Generally speaking, I agree with you.

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Mr. Black: You have taken good care of yours. It is like an old man, if he has taken good care of himself, he is all right, but if he has abused his youth he is good for nothing when he is old.

Mr. Lippincott: That recommendation of Mr. Black's will do very well for nurserymen, but I think it will not be all right in practice. I have a pear orchard 30 years old, I think, and I picked finer specimens off of it than I did off of my orchard seven years old. I can find finer specimens in that orchard than in one seven years old.

Mr. Black: You have seen plenty of 20 years old orchards that are just as I say.

Mr. Lippincott: Not because of the fruit, but because of the want of care of them.

Dr. Ward: To corroborate what I said, I see my friend Mr. Goble here; he went through my orchard and I ask him.

Mr. Goble: I shall have to corroborate every word Dr. Ward says. In other words, if he is telling a story I will have to stand by it and swear to it, but he did not tell a story. I was in his orchard just before he picked his Kieffer pears, and they certainly were a sight; they were just as nice as any nursery stock just set out.

Dr. Ward: Speaking about manure, I put in all the compost that I can get into the ground, spread it and plow it in and keep the ground clean.

Mr. Black: If I have the right idea of what this question is intended for, it is some orchard that has been run down and now they want to know what to do to revive it.

Dr. Ward: Cut it down.

President Roberts: No, what fertilizer shall we use on an orchard 20 years old? Dr. Ward has answered it, put on all the manure you can.

Question: Is chickweed worth as much as rye for a winter cover-crop?

Dr. Ward: It costs more to keep chickweed out than ten rye crops. I have it in my ground, especially my strawberry ground, and it is awfully expensive. I would put rye in a hundred times over rather than get chickweed.

Mr. Black: Chickweed makes a good cover, but it is a very expensive one; I prefer rye, as chickweed is a nuisance.

Question: If blight enters through the bloom, why do young trees, that have never bloomed, blight?

Mr. Skillman: That is a very interesting question, and I would

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like to see that answered. That refutes this idea that the blight comes from the twig or in the blossom and works down.

Mr. Black: I never believed in that theory. It might possibly be that the germs are carried from tree to tree by the bees from the bloom, but that is not the sole cause, because the trees are just as liable to blight before they ever bloom as afterwards, and more so if they have been fertilized with nitrogenous manure.

Mr. Fraser: The knife carries it largely.

President Roberts: The entomologists tell us that the bees spread it, and it is largely spread through the blossoms. They do not say that is the only way. Some people will tell you that it spreads with a knife.

Mr. Black: But trees blight that never had a bloom or a knife on them.

President Roberts: But that does not prove that the blossom does not spread it. Some men will tell you that a bruised place is more likely to blight. Why does one theory conflict with the other?

Mr. Black: If you notice the young twigs, whether they get to bloom or not, are most likely to be taken with blight, and it extends right down to the main limb, whether there is a bloom at the end of it or not.

Mr. De Cou: I have had considerable experience with that. I have found that where pear trees have been cultivated the blight has seemed to spread a great deal faster than otherwise. I was advised by a person who seemed to know, to sow my orchard in clover, and in two or three years it checked the blight, and since then I have been careful about it. I have an orchard 17 years old and have less blight in it than I had four years after it was set out, and I think one cause is, that I have taken right good care of it, and I think thorough pruning will aid in keeping fruit brighter than anything else. I found where trees have died, single trees, on that tree the fruit has been bright, and they have been thoroughly pruned and the fruit has been more rusty. I have had buyers come there,—of course, this may sound egotistical,—who said it was the finest fruit they have seen, and offered me 25 cents more per bushel. Since I have stopped cultivating and thoroughly fertilizing my trees they do not blight nearly so much, and the rust has not been so bad. You can take that for what it is worth.

Question: Have not our worst years of blight followed within the last three years after severe winters? Might not it be caused by

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deterioration through the breakdown of cells either through improper tree food or freezing?

Mr. Skillman: My experience is, that it is worse the next year after a severe drought.

Mr. Black: The past season with us has been about as severe as I have ever known. We have neither had a severe drought or a cold winter, still I am satisfied that trees that have been weakened by winter freezing the sap, are more susceptible to it than they are if they are good and sound. Still, it does not always follow after a cold winter. The past season more trees blighted than I have known for several years.

Mr. Reid: Can you tell why there was so much of the fruit blighted last year?

Mr. Baird: I can not give you any light on it. Some trees would not blight a bit, and other trees would blight severely. What is the reason I do not know; I would like to have somebody tell me. The same is true of the Wealthy. We had some of them blight terribly and some did not blight at all.

President Roberts: The Star was one of the worst too.

Dr. Ward: I own some trees that have never blighted, and we had that big blight. It is the first time I have ever known it. Every year I have had a heavy crop and had last year, still there was that tree blight noticeable all through the trees—I could not account for it. It is the first I ever had.

President Roberts: Is that the Green Boussock or the Russet Boussock?

Dr. Ward: The Doyenne Boussock; mine are the old regular Doyenne.

President Roberts: It is one of the most profitable bearers I raise, and that is the only name we can get for it.

Mr. Black: What is it?

President Roberts: I am speaking about the Russet, a big rank grower, that is one of the best we raise. We call it the Boussock.

Mr. Black: That is not a Boussock.

President Roberts: I do not care what it is, it is one of the best I have.

Dr. Ward: Mine when they color are golden yellow.

President Roberts: We call them that because we saw some coming from New York and we looked them up in Downing's, and we thought we found they were a Boussock. The trees are rank, vigorous growers.

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Dr. Ward: Hold the foliage well?

President Roberts: Yes. Mr. Collins has investigated them and started a good many young trees from them.

Mr. Collins: They are strong growing trees.

Question: What is the best preventive of rust in strawberry foliage?

President Roberts: Mr. Lovett can help us out.

Mr. Lovett: I can not help you out at all.

Mr. Black: I think the best plan is to plant the variety that is less likely to rust in sections where strawberries rust badly. There are some varieties. The old Charles Downing used to be grown quite extensively, but they rusted so badly we had to throw them off, and there are some varieties that are much more liable to rust than others in certain sections, and the best plan is to plant the variety that rusts the least.

President Roberts: Will Bordeaux check it in a measure?

Mr. Lovett: I think it will.

President Roberts: What would we do if we did not have the Bordeaux mixture?

Question: Has anyone grown cow peas in asparagus beds? Is it a good practice?

Mr. Black: A friend of mine near Hightstown, who has some four or five acres of asparagus, planted cow peas in it for two or three years and discontinued it. He said that the cow peas grew so rank they kept down the asparagus growth and he stopped growing them. Still, I think on very light soil where there is not enough farm yard manure it is a good plan to use cow peas in asparagus for three or four years until you begin to cut it, and then after that the cow peas choke down the asparagus.

Mr. Crane: I want to ask a question in regard to apples, what would you recommend as the best three varieties, considering quality, large amount of production, and keeping qualities, for winter use, and for home use?

President Roberts: For what section?

Mr. Crane: For Northern Jersey, Essex County.

Mr. Skillman: I would suggest the Lankford Seedling, Rome Beauty, Stayman's Winesap and Stark for long keeping winter apples for family use, and the Ohio Nonpareil for late fall and early winter.

Mr. Black: You might as well put in the Ben Davis.

Mr. Baird: Why do you not include the Baldwin?

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Question: Does fumigation injure nursery stock?

Mr. Skillman: I want to say in answer to that, yes, and I want to hear the opinion of others. I asked the question. My investigation teaches me that it is injurious to nursery stock. I have planted trees that have been fumigated and they grew all right, and I have planted others that are not all right. I have lost hundreds and hundreds of trees. I am thoroughly satisfied that under some conditions fumigation injures and kills nursery stock. I am told if the trees are wet or the wood is immature when the treatment is made on the trees, that it will injure them. I have heard several reasons given, and I do not know the cause, but I do know that nursery stock is injured by this. Nurserymen, as I understand it, will take their trees in the fall and put them on a wagon, and while on the wagon to save labor and expense they will run them through this fumigating plant. We cannot expect these nurserymen to come here and get this law changed that is compulsory. We cannot expect them to come here and have it taken off the statute book, and we cannot expect these nurserymen, who have thousands of dollars of trees that have been fumigated, to come here and tell the Legislature that they have a whole lot of damaged stock and want that law repealed. As good an authority as Charles B. Smith, in the Rural New Yorker, said that fumigation always weakened a tree to some extent, and yet he is the man that got that statute on the books. For my part, I have no objection to a man having fumigation if he wants it, but I do object to having it crammed down my throat when I do not want it. I would like to purchase trees without fumigation and take my own chances about the scale. Out in Oregon they had compulsory fumigation, and they repealed it and compelled the nursery stock to be dipped in lime and sulphur solution.

Mr. Black: Professor Smith says he does not think it wise.

Mr. Skillman: He is human and may have made a mistake before, and may be mistaken in this.

Mr. Black: You may be mistaken.

Mr. Skillman: That is possible. The idea was that fumigation under some conditions is injurious to trees, and I do know that men have admitted it to me. I know of a nurseryman who fumigated two or three carloads and was so injured by it that he never collected pay for them. I do know that I have suffered from fumigation, and I object to having my trees fumigated when I do not want them so treated. I like the privilege of buying them without that, and I can not do it here in this State.

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Mr. Black: Did you ever have any failures before we had fumigation? However, every case of failure is laid to fumigation by certain men.

President Roberts: I think that is not a fair statement.

Mr. Black: I want to ask Mr. Skillman whether some people do not die after they consult a doctor and take medicine, still he believes in the doctors.

Mr. Skillman: I have never died after being treated by a doctor.

Mr. Black: My experience is, that if properly done, fumigation does not injure a tree.

Mr. Skillman: Under any conditions?

Mr. Black: Under right conditions. We fumigate our houses. A doctor can kill you with one dose of medicine, which he often does, and it is just the same with fumigation. If you put the trees in when they are wet they are more liable to be injured, but a careful nurseryman will not do that. I have seen trees that were treated all alike, where one man had nearly a failure and the other man's trees were a perfect success. Fumigation did not kill them, there was some other cause back of it, and it was laid to fumigation.

Mr. Skillman: It is all very well, but here's a nurseryman that admits that it has injured trees under some conditions. That is what I claim.

Mr. Black: But you were condemning the general practice.

President Roberts: You are not treating that subject fairly. Has anybody else anything to say on this subject?

Mr. Hale: I want to ask whether the law defines how long they should be under the influence of this gas?

Mr. Black: There is no time we are limited to, but Mr. Harrison from Maryland says he fumigates them about 40 minutes. If he has a large bulk he might as well keep his trees out, because it will not go through them in that time. We never subject them to less than one hour, and without that I think it would not be effective. I am thoroughly sure that every scale that is not covered with soil or has some protection is killed when he gets through fumigating, and I would not plant trees unless they were fumigated.

Mr. Morgan: I do believe fumigation under certain conditions will injure nursery stock. I have had some experience. Years ago I bought some peach trees from two different nurseries in the same State, and one lot was fumigated and the other was not. There were varieties that were of the same lot, and I planted those peach

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trees, two rows of one kind, one with one nurseryman and the other with the other, planted them right side by side on the same soil. The peach trees from the one nursery that were fumigated, nine out of ten did not leaf, that is they started to go out and died. The trees were perfectly healthy, there was nothing the matter with the use of them apparently, but for some reason these fumigated trees did not grow, and this variety was the Belle of Georgia. Nine out of ten died, almost every one of the other trees lived.

Report of the Committee on the President's Address.

WILLIAM H. REID, Chairman, Tennent, N. J.

Your committee in considering the President's very practical address, find in it much that is worthy of consideration.

We realize the many advantages we enjoy as regards location, markets, etc., and feel that these advantages should be an inspiration to our members to keep well abreast or better still a little ahead of the Horticulturists of the United States. We would call especial attention to the President's suggestion in regard to increasing our membership and would suggest the adoption of the method so successfully employed in Connecticut, viz.: The appointment of solicitors to wait upon visiting fruit and vegetable growers with a view to inducing them to become members of our Society.

We also approve of his suggestion, that, in the revision of the fruit list, we take into consideration the difference in soil and climatic conditions in our State, and that a fruit list be made out in such a way as to show the varieties of fruits best adapted to North Jersey and those varieties best adapted to South Jersey.

As regards his remarks in connection with the Trolley Freight Law we believe that it is well adapted to the rights and needs of towns, cities and thickly populated communities, but we also feel the subsequent enactment of the Limited Franchise bill is detrimental to the development of Trolley freight lines in rural communities, and we suggest that our members give this matter careful study and consideration during the coming year with a view to taking intelligent action at our next meeting.

Respectfully submitted,

W. H. REID,
JOS. B. WARD,
S. B. KETCHUM,
Committee.

On motion, the report was received and adopted.

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Report of the Nominating Committee.

JUSTUS W. DOBBINS, Chairman, Verona, N. J.

(Report found on pages 3 and 4.)

Dr. Ward: I move that the report of the Committee be accepted, and the Secretary be requested to cast the ballot for the officers as reported by the Nominating Committee.

Motion seconded and carried.

Report of the Auditing Committee.

LESTER COLLINS, Chairman, Moorestown, N. J.

As Chairman of the Auditing Committee, I will say that we have examined the accounts and vouchers and find them correct. We find in the treasury $853.66.

Mr. Ketcham: Mr. President, it certainly is very gratifying to your Nominating Committee to have such harmonious action. There is one matter, however, that I would like to call attention to, and that is, that there is a change in one of the offices that we wish distinctly to bring to the attention of the society, and to say that it was a cause of great regret to us, that we named another person in the place of Mr. Blackwell. Mr. Blackwell has served us faithfully through the days of the society years ago. He has been one of the mainstays in the early days when it was struggling for its existence. He has faithfully held the keys of the treasury for a long time, and it is only on account of his bad health that we have consented to receive a declination from him. In view of his faithful service your Nominating Committee recommend that this society extend to him a vote of thanks, and that that vote be taken by a rising vote.

Dr. Ward: I want to second the motion Mr. Ketcham has offered. As a member of the Executive Committee, three times during the past year our friend Mr. Blackwell has offered his resignation to the Executive Committee owing to the condition of his health, each time the Executive Committee refused to accept his resignation. Mr. Blackwell has served our society long and faithfully. It is sad under the circumstances to accept his declination, but he has said to me, as he has said to the Executive Committee, that it is imperative, and it is with sad hearts, with a sad heart myself, that I am compelled to part company with such an honest, faithful man.

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The motion was then put and carried unanimously by a standing vote.

Mr. Blackwell: Gentlemen, I wish to thank you for the appreciation you seem to have of my services. I wish you all a pleasant time hereafter and as successful as you have been in the past. I think probably this is my last time to ever meet you.

President Roberts: Oh no, no.

Mr. Blackwell: It is hard to tell.

President Roberts: We are all very glad that Mr. Blackwell in his sick condition left a sick bed to be with us to-day. We appreciate it, and we are all glad that this is a red letter day in our society. We took in 38 members this morning.

Mr. J. L. Lippincott: The committee appointed to draft resolutions in connection with the proposed increase on the duty on apples in Germany, have made a hasty draft, which they submit:

RESOLUTION.

In view of the great importance of the apple industry of the United States we ask our Representatives and Senators of the State to strongly urge the continuance of the minimum duty as now imposed on green and dried apples by the German Government.

The minimum duty as now imposed is 50 cents per bbl. and it is proposed to increase it to $1.65 per bbl. On dried apples the proposed increase is about three-fold.

The above will become operative on June 30, 1907, unless checked by our government.

ALBERT T. REPP,
JOHN C. COLLINS,
J. L. LIPPINCOTT.

Dr. Ward: It seems to me it would be well to refer that to the coming meeting of the State Board of Agriculture, and have them appoint a committee on like lines, and then have it sent to our representatives in Washington for them to take action. What do you think, Mr. Dye?

Mr. Dye: There would be no objection to having the additional indorsement of the Board of Agriculture, but this is strictly the indorsement of the State Horticultural Society, and it is supposed to cover the fruit interests, and perhaps a resolution emanating from this society would be sufficiently strong.

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President Roberts: It would have to be acted on here before it could go there.

Mr. Pancoast: I speak with some diffidence on this subject, but I want to ask is it not true that the high German tariff will be imposed unless our tariff is modified? Have not they told us that, and ought we not to ask our representatives to so modify our tariff as to secure the present minimum tariff?

Mr. Reid: I would add something additional, that a copy be sent to our representatives. It should be put into their hands in some way.

Mr. Collins: That is the idea, but they have not got it in shape.

Mr. Baird: Cannot it be referred to the Executive Committee to be disposed of?

Mr. Reid: That would be all right.

Mr. Lippincott: I think it would be wise to refer it to the Executive Committee, but in view of the fact that this law is so nearly becoming operative, if anything is going to be done, it needs to be done pretty promptly.

Mr. Dye: It would have to have the indorsement of the Executive Committee to be forwarded by the Secretary of this society to Washington, and if it is referred to the Executive Committee and fixed up to meet the requirements, that is all that is needed.

The matter was referred to the Executive Committee.

Dr. Ward: Two names have been put on as officers of this society who are not members.

President Roberts: We want them to be members.

Dr. Ward: Yes, but they have been notified time and again during the past year and yet they have not become members. If they can not pay the dollar I think they ought not to be elected officers.

Some Experiences in Horticulture.

JOHN S. COLLINS, Moorestown, N. J.

In the year 1854 I asked my father for the loan of a piece of ground in an apple orchard between two rows of trees, 2 rods wide and 20 rods long, ¼ acre of land. One-half was planted in Raspberries and the other ⅛ acre with three rows of strawberry plants, mostly Hovey Seedling, a few Early Scarlet for pollenizers. The next fruiting season the three beds produced 900 quarts of berries, for which I received $185. The beds were continued a few years,

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but never produced as well as the first crop. At that time, 25 acres of strawberries produced the supply for the Philadelphia market. A person with three acres was considered a large grower, and during some stormy days in picking season, a grower who advanced the general price of 2½c per quart, to induce his pickers to work in the rain, would control the market the succeeding day. The increase of supply and demand of strawberries since that time has been large, many varieties have been planted, some had only a local existence. For instance, the French Seedling, a large early berry of which I planted five acres in 1864 yielded in 1865 on the 26th of May, 2,600 quarts that sold for over $500. The old Hovey Seedling, and the Wilson Albany, introduced later, were standard sorts and widely planted for a long time. The business of selling strawberry plants has grown wonderfully, many best sorts have been advertised, it has even lived through the exploded idea of pedigree plants.

The apple orchard referred to of three or four acres of perhaps 20 sorts, occupied the ground for forty years or more, never was very profitable, mainly because the selection of varieties did not prove to be the best assortment for market.

In the Spring of 1861 I planted three acres of asparagus, rows 4 feet and 15 inches apart in rows, as deep as a large plow would make the furrows. The land was sandy and laid inclined to the North. The bed had reasonably good care, was fertilized annually with stable manure at the end of each cutting season and cultivated later to keep down most of the weeds. Complete fertilizers were not in general use at that time, only some Peruvian Guano on the market at three or four cents per lb. By examining the soil in early Spring there seemed to be numerous small feeding roots near the surface so the plan of not disturbing the surface of the bed in the Spring was adopted: the quantity of early asparagus was larger than on other beds more favorably located. Although roots were closely planted, the quality of the asparagus was uniform and nice. The bunchers in some cases bunching and tying for market 40 bunches per hour. The yield of the bed in 1868 was over 7,000 bunches. The first cutting April 24th, 22 bunches, sold for $1 per bunch; in 1869, 7,678 bunches, first cutting 41 bunches at 75 cents, April 23rd; 1870, 10,355 bunches, first cutting April 22nd, 25 bunches sold for 90 cents. Averaging for the three years between 15 cents and 16 cents per bunch. We have planted several beds since that time much wider apart, have marketed some with only eight spears per bunch. In the Spring of 1900 we planted seven acres, rows 7 ft. 2 ft. in rows.

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expecting to have something fine, but the rust found it before the end of the first season's growth and continued from year to year, although we tried to keep it off by spraying with Bordeaux, Sulphur, etc. The yield has been small as were the spears in size. The insidious rust has decreased the quantity of asparagus for market in New Jersey and elsewhere for several years, the result has been high prices for a good article. From appearances the past season, the rust is abating somewhat, in which case, the quantity will increase and probably the price will be lower in the markets.

In the fifties John Wilson, of Medford, N. J., removed from the New Jersey Pines to his garden a blackberry plant, which was later on removed to my garden in exchange for $5. It was a plant that bid fair to produce a valuable market berry, it was called Wilson Early. With a view of further testing the value of the berry as a market sort, I bought a farm near Merchantville, N. J., of 80 acres at $200 per acre, planted 75 acres of it with this berry as promptly as the plants could be raised, planted rows 8 ft., 4 ft. apart in rows, topping the young plants when four feet high. It took some years to get started in good shape but in 1870 it produced 6,500 bushels of blackberries, which sold in the Philadelphia and New York markets for over $20,000. That was much the best crop the plantation ever produced, but the plants occupied the ground for a number of years; after which on about 3-5 of the farm a more valuable crop has been raised, one that required in 1906 an addition to the school house for that school district costing over $15,000. On most of the balance of the land Kieffer pear trees were planted in the blackberry rows, and in a few years the blackberry plants were removed; the pear trees occupy the ground and look as business like as ever.

In the early eighties the Niagara grape was trotted out at $1.50 each with the proviso that if one half the fruit grown from them in 10 years did not fetch enough to pay for the vines the balance of the debt was to be forgiven. I took 2,000 vines on that plan, planted 8 feet apart in rows, trained to two wires, one arm to each wire each way. They started off well, the fruit selling at 25 cents per pound wholesale, but the black rot found them, and the Frenchman at that time had not reported his trial of sulphate of copper to keep off marauders and thieves and too, that the application was valuable as a fungicide, we did not know how best to fight the rot; one year trimmed closely and cut off all the fruit to starve out the rot spores. It had a good but not a perfect effect. About this time we purchased a Field Force pump for spraying Bordeaux, etc. We sprayed the

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vines and continued them for about twenty years from time of planting. The Niagara proved to be a good market grape—we are growing it yet, have over fifty acres in grapes planted 8x8½ feet trained to one wire about 4 feet high, one arm each way, and are satisfied with two or three tons per acre. Plant mostly Concord, the old standard sort, that is grown widely and by the thousands of car loads each year, and yet to think of the irony of fate, that the originator, Epraim Bull should not have had a comfortable competence in his declining years.

At the Centennial Exposition held in Philadelphia in 1876, the Kieffer pear was first exhibited. It has proved to be a valuable pear and is largely planted, not of the best *quality,* unless *well grown* and properly ripened. Peter Kieffer of Philadelphia, the originator, had but few Kieffer trees to sell in 1876. As a favor, I received a few trees at $2 each and from these few extended my planting of them until our orchards contained about 15,000 trees planted in large blocks, nice to look at, but did not bear fruit except where near to other pears blossoming at the same time, or on outside of the orchard where bees could bring the pollen from blossoms at a distance. The Wise Men of the East had not informed us as to the importance of pollenation. The only feasible plan seemed to be to top graft a part of the Kieffer trees, or to plant other pear trees among them, both plans were carried out using Le Conte for the purpose. In a few years the orchards were productive and so continued in 1906. The last four years we have been exporting our No. 1 Kieffer pears, the past two years, over 100 car-loads each year, packed in boxes of about 50 pounds, each pear wrapped in paper. We use imported lumber for our boxes, have a box machine to make them which enables us to get a drawback on the imported material of 98 per cent. of the duty paid on the lumber. The first car of paper received in 1906 paid a duty of over $200, but the drawback was not available on it because it was manufactured out of the United States. The foreign market for Kieffer pears has not broadened as we hoped it would. The markets for Kieffers are easily over-supplied to the extent that the sales of the pears will not pay the large expenses, or cash outlay, in which case the account sales come back written in red ink, showing a shortage to be made up. In October we shipped on steamer at New York, 3 car loads, 1,758 boxes, about 2,500 baskets of pears to London. They arrived over in good shape and sold for $1,418. When all charges and expenses were paid it left for us 6½ to 7 cents per basket on the trees in the orchard. It has been a

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satisfaction, however, to ship the pears across the ocean, it relieves to that extent the markets on this side that are at times over supplied. We had in 1906 five hundred barrels of early pears, Comet, Koonce and Early Harvest, none of them are as good quality as the Kieffer, but have a niche to fill in the early markets, the Comet leading in good looks and price, selling at over $4 per barrel in some instances.

We came into possession of a farm in the Autumn of 1895. In the Spring of 1896 we planted an apple orchard of 120 acres, 100 trees to the acre, except on a part of the orchard Kieffers were planted as fillers and a few acres of plums, Wild Goose and kindred sorts which did not pay and were removed. The San Jose Scale had arrived and to make sure that the trees were not infested, the trees were dipped into a solution of Crude Potash which proved too strong and it killed quite a number of the apple trees, in fact, we have lost many more trees by applying improper mixtures in fighting the San Jose Scale than the insect ever killed for us. If the soluble oils, either Scalecide or Target Brand Scale Destroyer had been introduced at that time and a solution of either, of one gallon to 15 gallons of water, the trees dipped therein need not have been injured and not a living insect remain on a car-load of trees, and much more effective and less injurious to the trees than the plan of fumigation, that is some times practiced.

Corn was grown for six consecutive years in the orchard after which for two years market peas, since that time the trees occupied the ground, we have a succession of varieties from early to late, but the larger portion are sorts to market in Summer time. Star, Yellow Transparent, Ohio Beauty, Wm. E. Red, Wealthy, Plum Cider, Grimes' Golden, Rome Beauty, McIntosh Red, Sutton, Stayman, Jonathan, York Imperial and Ben Davis.

In the year 1899 a farm of nearly 100 acres within less than three miles of the cities of Camden and Philadelphia was for sale, the owner a man of a former generation, tilled it successfully and profitably, his children became possessed of city ideas and the farm was rented and run down to the extent that the tenant of that year was only asked to pay the taxes. An adjoining farm was also for sale, the two making 155 acres bought at less than $84 per acre. This farm was planted in Apple trees, 100 trees per acre, except a few acres in asparagus. We had a fight with the San Jose Scale, lost some trees by it, some by the use of improper mixtures, loss of trees not over 3 per cent. in both cases. The trees were thoroughly sprayed with the soluble oils during the past Fall and early Winter,

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which we consider will hold back the San Jose Scale for one year. The orchard has been planted in market peas and corn, but trees now supposed to occupy the ground. The varieties planted are mostly Star, Wealthy and Grimes' Golden.

These lines refer to doings of over ½ a century and the one subject, that is very important to all farmers and fruit growers, the one that has taken the largest share, yes ¾ of all the money the writer ever received for all crops grown, has not yet been mentioned, that is, the labor question. Early in the time we chose the plan of having tenant houses for the help, some of them roomy enough to enable the tenants to board transient help employed during busy seasons. A large proportion of our help was born in Ireland and came to us fresh from across the Sea, some times called *"green horns,"* some who could neither read nor write have not been the least efficient. A score or more of them now own farms and all who have been temperate have prospered and are prospering. We now have fifteen tenant houses one of which is just being completed.

President Roberts: The subject is now open for discussion.

A Member: I want to ask about the Star apple, what its merits are?

President Roberts: It is a large green apple that comes fairly early. We marketed some in June of this year and we have a long season, and it is a good cooker. It is not a good quality to eat unless it gets very ripe, it is very tart.

A Member: Did you export any Kieffer pears this year?

Mr. Collins: About a hundred carloads.

A Member: Was it profitable?

Mr. Collins: Fairly so, considering the home markets, but we figure that everyone we can get out of the country helps the others that are left in it.

Mr. Holdrum: How do you pack those pears?

Mr. Collins: They are packed in bushel boxes, hold about a bushel, and packed by women, piece work. Each pear is wrapped in paper like the oranges received from Florida and California. They are packed in what we call fours, four wide and four high.

A Member: Are they closed up tight?

Mr. Collins: Yes, nailed tight. The apple trees are planted in blocks of five, on one farm the rows are 16 feet apart and the trees are 22 feet apart in the row. Every fifth row is 29 or 30 feet, that is a driveway to haul out the fruit.

Mr. Reid: Are they all in squares?

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Mr. Collins: Yes, the last orchard was planted 16 by 22 all over.

On motion, the paper was referred to the Executive Committee.

President Roberts: Last summer we sent a delegate to a fruit meeting down on the Peninsula. We will call for a report of that committee from Dr. Ward.

Report of Meeting of Maryland Horticultural Society.

DR. JOSEPH B. WARD, Delegate.

I wish I had words to express myself properly in reference to the royal manner in which your committee was entertained last August by the Harrison Brothers, of Berlin, Maryland. I, for myself and the other member of my committee, can say that we have had a good many good times in my life, but I think this little trip of mine down to the Peninsula was about as fine as I ever had. I have not said very much about it in my report, but it was an object lesson to me the way those folks were growing fruit, not only right on the Peninsula, but on that entire Delaware border. Their mode of fertilization was entirely new to me, and I became so enraptured with that southern climate that it would not take very much for me to change my residence from New Jersey either close to the Maryland or Delaware border. After my duties ceased as a delegate I expected to return the next day, but I telegraphed my folks at home that when I got there they would see me, and I spent ten days just looking over the southern country, visiting farms, going in the families of those southern farmers, and I was so entertained as only those southern people know how to do it. Before I came away I had an option on two or three places, not yet completed, however, because I know the time is coming very shortly when I must leave my northern home, the place I have lived all my life, for the encroachment of the city upon me is getting too much. My taxes and assessments this year will be between four and five thousand dollars, and I can not grow fruit and pay any such assessments as that.

Your delegates to the Maryland Horticultural Society, Mr. Joseph B. Spendlove and Joseph B. Ward, received a warm welcome from our southern friends. Mr. Orlando Harrison, Mayor of Berlin, where the first day's session was held, was most courteous and attentive to the society. In his address of welcome said it was a great pleasure to welcome horticulturists, as they are men and women of high moral worth. He claimed the soil is the basis of all wealth,

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and every one who aided in its development is a public benefactor, and a blessing to future generations. Maryland he declared is primarily an horticultural State, and carloads are now provided where a few years ago only baskets of fruit were raised. What greater assets can you have on the farm, than a boy who can take the place of his father. He said he had gained great practical information by visiting the agricultural colleges and horticultural meetings. He advised all farmers to visit the Maryland Agricultural College and give it their hearty support, and cited instances where the college had been of material benefit to farmers in general. He spoke in high terms of praise of Berlin and its 1,250 souls, which were as large souls as you ever met, and he said as Mayor of the beautiful city, he gave the visitors the keys. It is the place where Commodore Stephen Decatur was born. Mr. N. Filtton in an address said that gardeners never grow old, when they reach the grey stage they are just commencing to live and appreciate life.

Capt. R. W. Silvester said Maryland is one of the greatest states agriculturally. He showed that the Patrons of Husbandry have in various ways materially increased helping conditions for farmers. There should be conditions that would allow grower, seller and consumer to work in direct harmony.

Dr. E. I. Dickerson spoke in high terms of the wonderful diversity of crops that can be raised. He said the first chapter of Genesis is a Horticultural one.

Early in the afternoon a visit was made to the Harrison Brothers nurseries. Every vehicle in Berlin was secured that could be utilized even then one was a hay wagon body, drawn by a four mule team, on which 40 visitors rode over the seven miles drive to inspect the Harrison nurseries of over a thousand acres in nursery trees. The nurseries comprise 14 farms, and each farm has its superintendent and employes. I saw 100 men, women and boys engaged in budding peach trees that had come from seed. So far 1,000,000 have been budded and there were 2,000,000 yet to be budded this season. The immense fields, perfectly level, with these young seedlings about two feet high, being miniature trees, of the dark green color that indicates a vigorous, healthy growth, made a very pretty picture, indeed. An idea of the immensity of these nurseries can be had when it is known that there are 3,000,000 apple trees ready for budding, and over 1,000,000 now ready for market: pears, 2,000,000; plums, 200,000. Sixty acres are used each year for growing strawberry plants. The working force at the time of my visit was 250 persons, and 54

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horses and mules. Colored boys, 12 years old, are very expert in tying buds, and will tie 4,000 buds a day. Negro men will put in that many buds, and small boys go ahead in the rows and strip the lower body of the seedling trees, making them ready for the budders and tyers. The method is perfect, and 90 per cent. of the budded trees grow. Young colored women gather from stock trees branches containing suitable buds. It was a surprise to the many visitors to see how apparently easy each did his allotted work. The quickness and perfection are astonishing.

The entire nursery is kept as clean as a market garden. Various kinds of implements are used to keep the soil in mellow condition and to destroy weeds. The old time hoe is kept bright in this work, as it can be used close to all trees. Cowpeas are sowed late in the season among the trees, so that their leaves will form a good winter mulch. They are also used in between the rows of strawberries for the same purpose.

The Harrisons started 19 years ago, not with the idea of a nursery business. Their aim was to bud to secure certain varieties of peaches that they could not purchase at the nurseries. These varieties were especially valuable for growing on the peninsula. Neighbors insisted on securing some of these budded trees, and in that way the demand was such that before they fairly realized it they were doing a real nursery business. From that venture to supply trees for their own fruit orchard has the present enormous nursery been evolved. It is an industry, said a western visitor, in talking to me, that puts Maryland in the front rank of nursery supplies, and as she is recognized as an horticultural state one would naturally expect something of the kind, but hardly of the vastness we here have found. Great wonder was expressed at the vigor and thrifty clean condition of bark and foliage of the trees. Spraying is done generally once a week, but the past summer, owing to so many frequent rains it was hardly averaged half as often. The many fields of shocked grain in the fields seen is evidence of the serious loss the rains have caused in this section.

Late in the afternoon, the visitors were transferred to Ocean City as the Harrison Brothers' guests. The evening was given up to sight-seeing, the visitors enjoyed themselves on the board walk and in the surf. The next morning at 9 a. m. the convention was called to order and short addresses were made by Dr. F. W. Beattie, associate professor in the United States Department of Agriculture,

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Chas. Barker, of Delaware, and I. Wesley Webb, of the same state, and Jos. B. Ward, of New Jersey.

The principal address of the morning was made by Prof. F. A. Waugh, horticulturist of Massachusetts Agricultural College. Comparing the conditions between Canada and the United States, Prof. Waugh said that in many ways Canada is ahead of us because the business methods are better organized there. Socially and politically, he said the different sections, the North and the South, are growing to be more alike. Consequently in the belief that they will adopt each others' methods it may not be inappropriate to make some comparisons between Maryland and Massachusetts. It is a well known fact that the better fruit market is in the latter state. They tell me that the best fruit market in the United States is in the city of baked beans. The principal reasons for this, is the close contact that exists between the produce and the market. Another reason for our success is that there are many who are not interested particularly in a professional way, but what we might call an amateur way. They are horticulturists by inheritance, and they do not expect to make a dollar. I do not speak derogatory to the man who wants to make the mighty dollar out of it, but these former horticulturists from the ground up, are working with the will that comes from loving it alone. Then there is a suburban population—people who have gardens and who are interested in growing for its own sake.

It is said that the thing that separates man from the lower animals is his thought for the future, and tree planting is symbolical of this thought. A man does not expect immediate returns from a tree. It is planted for the future. Prof. Waugh, speaking of tree planting, said it did not matter what locality a tree came from, just so it was a good tree. A good tree, he said, was not only a good looking tree, but trees grown from good stock and having good, hardy roots.

As regards the best time to plant trees, he continued, the best time is when you're ready. I have planted trees in every month and in every moon and made them grow. Late fall planting seems, however, to be the ideal thing. In starting out to plant trees, one of the problems, apparently is the selection of varieties. But as I go about the country and see the successful growers, I come to the conclusion that it is not the happy or wise selection of varieties, but good culture, good spraying, good growing.

On motion this was referred to the Executive Committee.

Dr. Ward: One thing more of the southern country. I am not

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speaking of the Harrison Brothers, but during my few days' visit in different sections, I was surprised to see the progress they are making in fertilization. On a large farm I visited there were about 1,000 or 1,500 peach trees, as fine a lot of trees as I ever saw, and a gentleman asked me to go down and spend the night with him, said he would like to drive me over. So I dismissed my conveyance and spent the night with him. The next morning I went out and went around his place with him, and the first thing I struck was the barn, and I saw some shredded corn stalks, a great pile, maybe eight or ten tons. I said, "What do you do with them?" He said, "I use them for bedding my stock." I said, "What are you doing with that great heap of wheat straw that had been threshed?" "We let that rot down, and if it gets to be too cumbersome, we set a match to it." Said I, "Why don't you put some stock on here and feed them some of this shredded corn, and use your straw for the very purpose that you are using your shredded corn for,"—I thought we northern farmers could teach him something. He laughed, "I don't know," that is the answer he gave me. Yet he had a full field of corn there and I asked him what he was going to get for it. He said he would wait until it was husked and then he would see. There the man had an opportunity of putting young stock on that place and utilizing the corn fodder, and making some money in young growing stock. There is something he was losing. Then I asked him about the manure as he went through his corn field, "What are you using as fertilizer, where do you get your manure from, we speak of it as compost in the North." "Why" he said, "I never use it. I keep one cow and a pair of horses." "How do you grow such corn?" He said, "Come into another field and I will show you," and we went there and there was crimson clover, and in another field there was great rampant cow peas, and pretty soon he said, "I will turn those in." "Do you use fertilizer?" "About 150 pounds to the acre," and it was as magnificent corn as I ever saw, and I found that right through the peninsula, they are utilizing the cow peas and the crimson clover for their fertilization, none of them scarcely using any barnyard manure, for very few keep large stock. I tell you there is a possibility there for a young man to go down with progressive ideas and make lots of money. He had this fine peach orchard, and I said, "How are you going to do about shipping?" "Why" he said "our market is right off here," and the next morning early a neighbor came along. He had an elegant load of peaches, Elbertas, they were very fine. I had not been feeling very well, and I said, "Joe,

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get into the wagon with him, I would like to see how he markets those peaches." I did not feel like riding to the station. He went over and came back, and I asked Joe how he managed it. He said right at the station these buyers are there, and we drove up, and one man came and said, "I will give you so much," and another said, "I will give you so much," and another buyer came up and said, "I will give you so much," and he finally sold his load of peaches at $1.10 right there on the ground, no more trouble except just to drive them up to the station. That is as good as we can do up North here. That is the condition I saw there, and this is right at the border between Maryland and Delaware. It was an object lesson to me, and I ordered a lot of cow peas to be sent to me to put into the ground next season.

A Member: How much is land worth per acre?

Dr. Ward: You can buy those farms from about—Mr. Brown, what is land worth there on the peninsula, bordering on Delaware?

Mr. Brown: Where do you mean?

Dr. Ward: Right on the Delaware border.

Mr. Brown: From $20 to $150 per acre, it depends upon the improvements.

A Member: The cow peas make the land valuable?

Dr. Ward: Indeed it does. I saw farms worth anywhere from three to five thousand dollars, from $100 to $150 an acre, according to the buildings.

President Roberts: The Doctor has given us a very full report. All in favor of referring this to the Executive Committee will say aye.

Mr. Dye: I want to second it, I believe Dr. Ward had a good time down there.

Mr. Ketcham: I want to say simply a word. We heard a good deal from the Doctor. Two things we have learned: our friends in Maryland know a good thing from Jersey when they see it. But another thing, I think that we as a society want to be very careful how we send Dr. Ward down there, or they will keep him.

Dr. Ward: It would not take very much, Mr. Ketcham.

President Roberts: The next time he goes I will go with him and bring him back.

President Roberts: The next on the program is the election of officers. The Secretary will cast the ballot, and will now read the officers elected.

(List of Officers found on pages 3 and 4.)

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President Roberts: That ticket is elected, and right here before the committees report I want to make one suggestion, and that is, that the reports from the Vegetable Committee, from the Flower Committee, and from all the committees that come here be terse and brief. Our delegates who go to visit societies should bring reports that are brief and terse. Some of our reports have been criticised this year, but the Chair can not help it. The reports are here and we have to take them as they are, but we want it thoroughly understood that we want only terse, meaty reports. There are two more subjects on the program. What will you do with the revision of the fruit list?

On motion, it was referred to the Executive Committee.

Question: Which is the best variety of tomato to grow for late market and at what time should seed be sown to produce the plants?

Mr. Aaron Collins: I use the Stone.

Mr. Black: The Stone is grown more extensively than anything else. I think most of the canners are satisfied with it. The seed should be sown, if it is sown in cold frames or beds, as early as the first of May or the last of April,—all the way from the first to the middle of May. Some times if right outside in the open, about the first of May, and then transplanted about the first of June to the middle.

Mr. Collins: The President can answer that as well as anybody else.

Mr. Pancoast: In Salem County the Stone is the favorite. I saw a patch on Congressman Hire's farm,—his son is a large packer. His father had attended some convention, and he had procured a package of Baltimore Favorites, and they produced far in excess of the Stone. Any grower might investigate them. We aim to have them sown in the bed by the 15th of April, and want to get done transplanting by Decoration Day.

President Roberts: How about the Cumberland?

Mr. Pancoast: That is not a favorite with the packer. He takes them when the grower will not grow anything else.

President Roberts: It is a good yield?

Mr. Pancoast: Yes; and the crops can be picked oftentimes by two pickings, and the Stone requires more, but they crack and rot and do not ripen well around the stem. It partakes of the characteristics of the old Trophy, although it has been improved and probably gets better every year.

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President Roberts: If the canners will have it, it is probably as profitable as any.

Mr. Pancoast: Up about Woodstown it is not as good as the Stone, around Salem they consider it more profitable.

Dr. Ward: In the Newark market the Stone is grown very extensively. I built up quite a local trade, had persons come to the place last summer to get the Stone. It was solid and smooth and a good color, and a great many German gardeners are growing the Acme.

Mr. Black: That is a good second early, but later in the season it does not sell well and the canners do not use it at all.

Dr. Ward: This is for market purposes right in the city, for home use.

Question: Is the brown tailed moth or gypsy moth in the State of New Jersey?

Mr. Dickerson: I think I can answer that. It is not in the State of New Jersey, and there is an appropriation voted by the Massachusetts Government, and also by the United States Government, and it is quite important that the United States Government should take hold of this pest and fight it, from the fact that it may travel westward and get into Connecticut. It is claimed that it has gotten into Connecticut, and they may get further West and may get to New Jersey. If it does, your forests will look just like Massachusetts does now. The hope is to confine it in the area where it is now and import parasites to fight it. We have in this country five parasites for the Gypsy moth and five for the brown tail beetle, but in Europe they have 25. This is a matter of great importance, and they are fighting it to check it. It is not in New Jersey. There have been some reports in the newspapers, but they are not true.

Mr. Lovett: I understood that the brown tailed and gypsy moth were both in New Jersey, but on investigation I found out to my satisfaction that they were not here. However, I understood that the gypsy moth was further south than Connecticut. I understand that it is now in certain parts of New York, and even in certain parts of New York City. I understand that the parks have taken steps to fight the brown tailed moth; at least it is so stated in the New York Herald.

Question: In setting a commercial orchard of Bartletts and Lawrence pears, should dwarf or standard trees be used?

Dr. Ward: I should say standard, by all means. I would say

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that the Lawrence is a poor seller in Newark and New York markets, but in the Philadelphia markets it is all right.

President Roberts: It is no more than all right.

Mr. Black: The Bartlett as a dwarf is of no account with us, it is one of the very worst growers that we have as a dwarf. It would be very foolish to undertake it commercially as a dwarf. The standard is the only thing that we can use. It does not unite well. The Duchess is best as a dwarf.

Question: What are the merits of the Star apple?

Mr. Dye: Let the President answer that.

President Roberts: The merits of it, as I see it, are that it is ready to market about the 4th of July. It can be marketed then, it can be marketed the week after or the week after that, or any time from then until the 1st of August. There are four weeks we can go to our Star apple trees and take off the crop, and they bring the highest market price. Or if you gather them about the 4th of July, and when the William's Early comes gather them, and when we are done with those go back to the Star apple, our Star apples can be marketed then and still bring a good market price.

Mr. Black: Are they as productive as the William's Early?

President Roberts: They are for me.

Mr. Morgan: What are the weak points of this variety?

President Roberts: This last year it had twig blight, no more than the Smith's Cider; but I have trees 40 or 50 years old that are not very large, but I think that is not due to any weakness in the trees, except that they are such heavy bearers, they never grew up very much. They have borne splendidly for me.

Mr. Morgan: There is another question: would it be any advantage to top work some of these early varieties of apples on some strange stock so that they would be longer lived,—would there be any advantage?

President Roberts: Is there any advantage in grafting weak growing varieties on strong vigorous stock?

Mr. Collins: I think that would be a good plan, provided there was not too much difference; if the stock was excessively weak and the graft excessively strong, it might not unite very well.

Mr. Morgan: But that would likely prolong the growing of these early varieties of apples?

President Roberts: I do not see why; it would depend somewhat on the soil. In our section if we can get trees we can get apples;

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in the Northern part they have more trouble with excessive tree growth, but in the Southern part we do not have that trouble.

Question: Should sweet cherries be grafted on Mahaleb or Mazzard stocks?

Mr. Black, Jr.: The sweet cherry is much better on the Mazzard stock. While there are some objections by nurserymen to putting it on the Mazzard stock, it is best to insist that the sweet cherry should be on a Mazzard stock.

Mr. Black: I think our nurserymen are making a mistake in sending their cherries on Mazzard stock; the sweet varieties are worthless on Mazzard stock. The sour cherries will do better. A great deal of the failure of cherries is due to being worked on the Mahaleb top. It is a great deal worse than fumigation and kills more trees. Of the cherry stock that is sent out by New York and Pennsylvania nurserymen that we buy to sell again,—we do not grow cherry trees in New Jersey—there is a large per cent. all the way from 50 to 75, die when they are first set out.

Mr. Morgan: I asked that question for the reason that I find it impossible to buy sweet cherries on Mazzard stock. Nurserymen put them on the Mahaleb top because I suppose they can grow thrifty trees in three years, and we find that in three or four or five years afterwards, they come back and ask why the trees die. Apparently they die and they do not know the cause. The cause is that the scion outgrows the stock, for the reason that the sweet cherry grafted on the Mahaleb stock makes a thrifty growth, and consequently, is short lived, and for that reason I have reason to believe that fully 75 per cent. of the sweet cherries that are planted die from that cause.

A Member: I hesitate to speak of a matter that I know of, but speaking of the gypsy moth, last summer I found a very peculiar moth, it was something new, and so much so that we were all interested, my wife and son. We looked at it and examined it with a great deal of curiosity. We made up our mind it was a newcomer, and we destroyed it. I was sorry I did afterwards. A short time after I received the report from the National Board of Agriculture, or from the Agricultural Department, and I found pictures and description of a gypsy moth, and unless there is some other insect very much like that moth, I saw one in New Jersey; I hope I am mistaken, but I am afraid I am not.

Question: How can cauliflower be kept until New Year's?

Mr. Black: The only way to keep it would be to keep it in a hot bed or a glass house. It would not do to let it freeze, and it would

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not keep without rotting; it would have to be in some position where it would retain its life.

Mr. Dye: I just want to say a word: this being a State organization, measurably supported by the State, it seems to me it is in duty bound to extend its influence as far as it possibly can throughout the State. There are localities in our State growing in horticultural interests, changing from general farming. If those localities could have the information that their people could have if they become members of this society by paying a dollar and receive its report, it would certainly be an advantage to them, and the society itself would be extending its influence and its usefulness; and I would suggest, very humbly indeed, for it is not my business, that the Executive Committee take that into consideration, and perhaps through the Secretary and the Grange this information could be given, that membership can be had for one dollar, which would entitle them to a report.

President Roberts: That suggestion will be referred to the Executive Committee without motion.

The President then called upon Frederick W. Gnichtel, the Mayor of Trenton, who made a few remarks.

Mr. B. G. Pratt: Mr. President and Gentlemen: I thank you for this opportunity to answer the question in regard to the occasional curdling of "Scalecide" when used in Gas Sprayers. My attention was first called to this fact by Mr. Lovett of Little Silver last Spring. We requested him to send us a sample of the "Scalecide" he had been using, and also some of this residuum from the bottom of the tank. The "Scalecide" was found to be perfect, showing a slight alkaline reaction, but the residuum was *strongly acid*. There is no acid in "Scalecide." To satisfy ourselves that ordinary carbonic acid would not cause this effect, we dissolved a glass of "Scalecide" in the laboratory and passed carbonic acid gas through it, strongly agitating it for twenty minutes or one-half hour without any apparent ill-effect. We have hundreds of customers using "Scalecide" with the Gas Sprayer with splendid success, so the only conclusion possible is that occasionally a cylinder of gas, by some carelessness of manufacture will contain more or less of free acid, which, passing into the mixture separates it and curdles the oil. If the oil is curdled it reduces the strength and efficiency of "Scalecide." We have been advising our customers who use the Gas Sprayer to agitate the "Scalecide" thoroughly before turning on the gas, after which it is

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not necessary, and if the gas is impure, it will have less effect on the mixture.

Mr. Miller: I had the same trouble a day or two ago, having several inches of this curdled stuff in the bottom of the spray tank. Would you advise washing it out?

Mr. Pratt: I certainly would, for any acid left in the tank would tend to separate the "Scalecide" in the next charge.

President Roberts: We seem to have run through our program. We are very much pleased with our attendance this year and hope to see you all next year. There being no further business the meeting stands adjourned.

Adjourned.

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INDEX.

Page.

Address of President—Horace Roberts..... 15-20
Apples—Gabriel Hiester 96-103
By-Laws 13-14
Cold Storage—George H. McKay.....127-133
Committee, Auditing 47
Nominating 48
on German Tariff 171
President's Address 20
Visiting Delegates 47
to solicit New Members..... 161
Cranberry Industry, The—Edmund Braddock..... 81-96
Cultivation of Native Huckleberries 119
Persimmons 119
Discussion on Apples 165-170; 177-179
Apple Blight 116-117
Bartlett Pear Growing.....155-160
Blight 194-196
Civic Improvement 124-127
Cold Storage 133-135
Curculio 164-165
Dead-blight and Hold-over blight.....115-116
Dwarf Pears 104
French vs. American Stock.....104-106
Grafting Stock 107-112
Kieffer Pears 30-33
Mackintosh Red Apple..... 79
Melons 187-191
Model Orchards 77-81
Mother Apple 107
Mount's Seedling Strawberry..... 57
Packing Kieffer Pears.....208-209
President Strawberry 57
Rambo Apple 103
Resolution on German Tariff.....202-203
Rex Lime and Sulphur Mixture..... 58-61
Russet and Doyenne Boussock.....196-197
Success Strawberry 58
William Belt Strawberry..... 56
William's Red and William's Favorite Apple.....177-179
Election of Officers.....214-215
Growing and Marketing of Apples, The—Albert T. Repp.....161-164

Digitized by Google

Page.
Higher Education in Horticulture—Prof. John Craig..... 62-77
Home and Town Improvement—J. Otto Thilow.....120-124
How I Grow Bartlett Pears—C. E. Blackwell.....151-155
List of Committees 3-4
Delegates 9-11
Members 5-8
Officers 3-4
Premiums 180-182
Market Fruits—J. W. Kerr.....171-177
Medal awarded by American Pomological Society..... 191
Melon Growing—Joseph Barton.....182-187
Memorial Resolutions on John Repp by Thomas J. Beans..... 49-52
Horace Roberts 52-54
Jacob B. Conover by David Baird 55
William H. Reid..... 54
Music 77
Prayer—Rev. George H. Bucher, D. D..... 15
Questions:
Best Fertilizer for Apple Orchard, Twenty Years Old?..... 193
Kieffer Pear Orchard, Twenty Years Old?.193-194
Five Commercial Varieties of Apples for Monmouth County? 192
Five Peaches for Monmouth County?.....192-193
Means to Eradicate Curculio?.....135-136
Methods of Preventing Ripe-Rot in Peach Orchards?.....140-141
Preventive of Rust in Strawberry Foliage?..... 197
Variety of Tomato for Late Market, etc.?.....215-216
Way to Prevent Kieffer Pears from Cloudiness?.....138-139
Compare Chickweed and Rye as Winter Cover Crop?..... 194
Does Bordeaux Mixture Produce a Russet Skin on Apples?....61, 166
Does Fumigation Injure Nursery Stock?.....198-200
Experience in Transplanting Apple Trees Twenty Years Old?.. 192
How Keep Cauliflower Until New Year's?.....218-219
Is it Good Practice to Grow Cow-peas in Asparagus Beds?..... 197
Is it Legal to Operate Traction Engine on Public Highway?...117-119
Is the Brown-tailed or Gypsy Moth in New Jersey?..... 216
Merits of Star Apple?.....208, 217-218
Most Profitable Ways of Utilizing Drop Apples, etc.?..... 140
Name Leading Power Sprayers; Advantage Over Hand Pumps?.139-140
Right Time to Spray for Codling Moth?.....136-138
Should Dwarf or Standard Trees be Used for Commercial Orchard of Bartlett and Lawrence Pears?.....216-217
Should Sweet Cherries be Grafted on Mahaleb or Mazzard Stocks? 218
Spray Used for Apples?.....166-168
When is Blight at its Worst?.....195-196
Why do Young Trees, That Have Never Bloomed, Blight?.....194-195
Will it do to Let Barlett Pear Orchard, Badly Blighted, etc.?...115-117

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Page.
Remarks by B. G. Pratt on Sprays and Sprayers.....219-220
Dr. John B. Smith..... 58-61
Hon. Frederick W. Gnichtel, Mayor of Trenton..... 219
Secretary Franklin Dye.....125-126; 160; 219
Visiting Delegates:
D. Maurice Wertz, Pennsylvania.....149-151
F. C. Bancroft, Delaware.....147-148
Orlando Harrison, Maryland.....145-146
Robert M. Eldon, Pennsylvania.....148-149
Remarks on High German Tariff.....168-169
Report from Meeting of Connecticut Pomological Society.....141-144
Maryland Horticultural Society.....209-214
New York State Farmer's Institute.....144-145
of Auditing Committee—Lester Collins..... 201
Committee on Display of Flowers—Dr. Walter Van Fleet.. 182
Committee on Display of Fruit—J. W. Kerr.....180-182
Committee on President's Address—W. H. Reid..... 200
Flower Committee—Dr. Walter Van Fleet..... 34-39
Fruit Committee—Charles Black..... 23-30
Nominating Committee—J. W. Dobbins..... 20
Secretary—M. W. Budd..... 21
Special Fruit and Flower Committee—Dr. J. B. Ward..... 55-56
Treasurer—I. J. Blackwell..... 22-23
Vegetable Committee—Howard G. Taylor..... 39-47
Resolution on German Tariff..... 202
Some Experiences in Horticulture—John S. Collins.....203-208
Tributes to I. J. Blackwell, retiring Treasurer.....201-202

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